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ABSTRACT

This book suggests creative, classroom-tested mathematics activities to teach number recognition and counting, number formation, sorting and classification, measuring (including time and date), shapes, graphing, estimating, ordinal positions, money, patterning, tallying, and fractions. Activities are presented in the forms of games, crafts, songs, and practice sheets. (MVL)

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Patterns & Activities for a Creative, Balanced Math Program

Tracy Jarboe & Stefani Sadler

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It's As Easy As 1 2 3

Patterns & Activities for a Creative, Balanced Math Program

by Tracy Jarboe & Stefani Sadler

Crystal Springs
BOOKS

A Division of Staff Development for Educators (SDE)
Peterborough, New Hampshire

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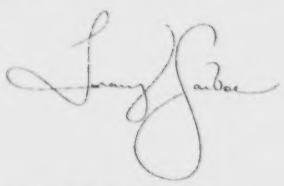
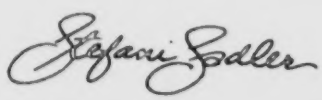
Dedication

I dedicate this book to my husband, David … an extraordinary math teacher, administrator, account balancer, interest-rate comparer, bargain hunter, and all-around mathematical and financial genius. I love you.



P.S. Don't worry—there are NO coffee bean equations in this book.

I dedicate this book to Leigh Childs … an amazing educator who has the skills and enthusiasm to make math fun and meaningful, and an author who, along with Laura Choate, gave me my first opportunity to illustrate a book.



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Preface

Between the two of us, we have more than 30 years of combined experience working with young children as both parents and educators. In those years we learned that we could provide a strong foundation for developing literacy by reading aloud to children and surrounding them with a wide range of printed materials. We knew that when we exposed students to print at every turn, we encouraged them to read.

Next we started looking for ways to provide a similar foundation for developing mathematical skills. We soon recognized that we could teach mathematical concepts in the same way we taught literacy: by surrounding students with the basic elements of those concepts. Math, we realized, can be found everywhere. The beauty of mathematics lies in its patterns, and we see those patterns in language, art, science, nature, and virtually every other aspect of daily living.

The key is to continue to give our students a wide range of opportunities to observe and explore these patterns. Facing a movement in recent years to teach to standardized tests, many teachers have felt pressure to stop using mathematical manipulatives, free exploration, and creative reasoning. We feel it is a mistake to abandon these approaches. Whole learning is a combination of current research, sound philosophy, and good teaching practice! At its core you will find children involved in exploration, patterning, reading, writing, counting, sorting, classifying, graphing, predicting, observing, connecting, recording, and creating.

We have found that students who are provided with rich mathematical opportunities—in many forms, and spanning the entire curriculum—do well in later, more complex mathematical learning. Most important, these students develop a genuine love of mathematics without fear.

Even though we now have a wealth of quality materials and training available to us, as teachers we are always learning, always modifying our educational practices and supplementing district-adopted curricula. We face the same challenges that you, as educators, face. As a result, we have sought to create a comprehensive book of math activities and patterns that will assist you in further promoting readiness and developing skills in young children.

The patterns and activities in this book are not intended to replace core mathematical instruction, but rather to enhance and extend the concepts you are already teaching. These patterns and activities, designed to meet current educational standards, are appropriate for use by an entire class or a small group, and many are also suitable for home schooling and/or for independent practice.

We sincerely hope you will find that these activities and patterns complement your basic instructional program, and that the children you teach will find them stimulating and enjoyable!

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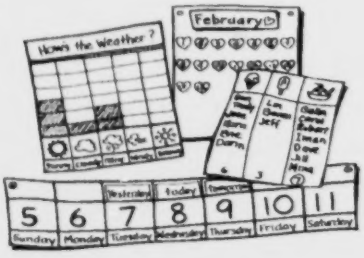
How to Use This Book

The many activities and patterns in these pages are intended to supplement your core mathematics curriculum, allowing students to work cooperatively in learning centers or independently, so that you have the time to work with other small groups. At the beginning of each section, you will find instructions for individual activities.

Section 1

It's As Easy As 1 2 3: Creating a Balanced Math Program for Young Learners



This first section discusses how to create a balanced math program in your classroom. It outlines key instructional elements as well as some of the basic skills to be developed, lists recommended resources, and suggests daily schedules that can help in developing vital math skills.

Section 2

1 2 3 Print with Me: Numeral Practice for Beginners

This section focuses on teaching correct number formation and offers a variety of worksheets for practicing.

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Section 3

1 2 3 Explore with Me: Seasonal Math Mats & Activities

Math mats provide extensive opportunities for teaching number formation, counting, sorting, patterning, and more.

Section 4

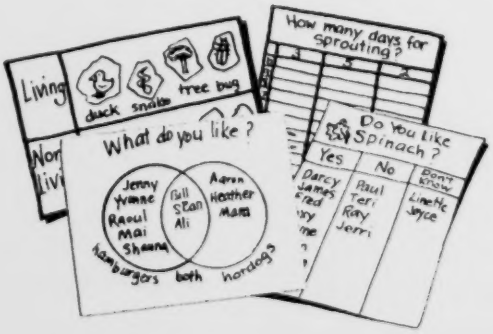
1 2 3 Read with Me: Early Emergent-Level Books Focusing on Number Recognition

Student-made number books integrate basic concepts of math and literacy. Children love to show off the books they've made!

Section 5

1 2 3 Graph with Me: Thematic Graph Activities

This section suggests specific ideas for graphs the class can create together. It also provides templates for different kinds of graphs that students can complete.



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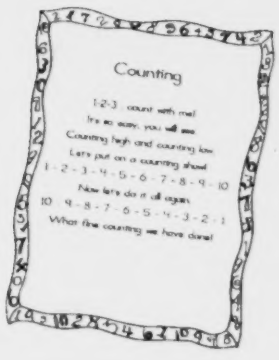
Section 6

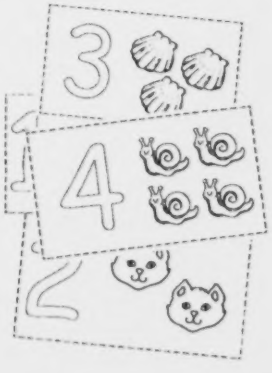
1 2 3 Rhyme with Me: Concept-Based Poems


Counting
1-2-3 ... count with me!
It's so easy, you will see.
Counting high and counting low.
Let's put on a counting show!
1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
Now let's do it all again.
10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1
What fine counting we have done!

Poems are wonderful learning extensions. After discussing these number rhymes together, the class can move on to creating number books that demonstrate the skills they have acquired.

Section 7

1 2 3 Count with Me: Multipurpose Number Cards with Picture Cues

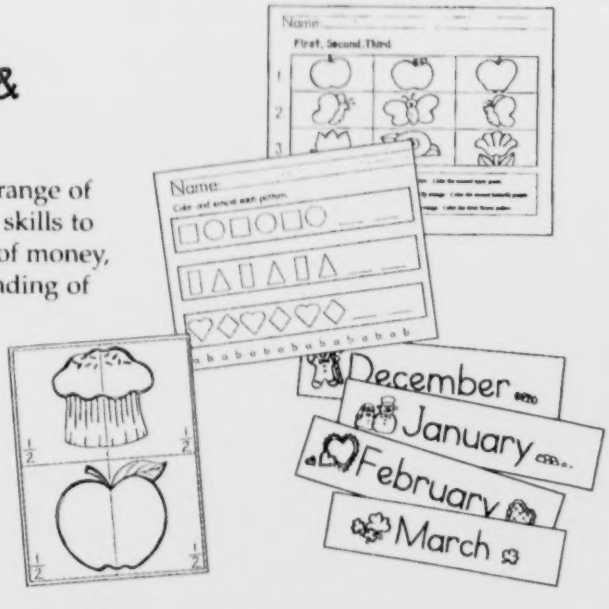


Number cards offer many fun and exciting ways to help young children learn to recognize and understand numbers.

Section 8

1 2 3 Build with Me: Extension Activities & Patterns

This final section suggests a wide range of activities for building on basic math skills to teach ordinal positions, the concept of money, skip counting, tallying, an understanding of calendars, patterns, estimation, fractions, and the concept of time.



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Section 1

It's As Easy As 1 2 3: Creating a Balanced Math Program for Young Learners

We have found it easy and rewarding to integrate many essential mathematical elements into each school day as part of a balanced program. In the following pages, we share some of these elements with you and suggest ways you may want to incorporate them in your own curriculum. We also encourage you to refer to the resource list near the end of this section, where you will find listings of other informative titles written by many of today's leaders in education.

Creating a Positive, Math-Rich Environment

A classroom that encourages the mastery of math basics contains both teacher- and student-made or purchased labels, calendars, charts, poems, songs, books, graphs, newspapers, math centers, and number lines. In this kind of number-rich environment, children learn to value math skills and to develop an understanding of basic math concepts.

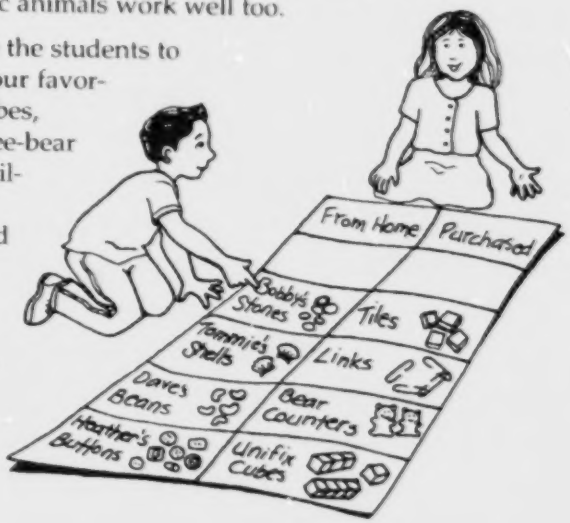
The key to this learning is the consistent use of manipulatives in the classroom. We know that in literacy development, students must have access to books in a wide variety of genres, levels, and styles. Similarly, in math development, children need to get their hands on a wide range of manipulatives. Manipulatives should be numerous, readily accessible, and rotated regularly. Ideally, they should include items such as buttons, seeds, lids, beads, and other materials gathered from the children's own world. Manipulatives like these help children develop an understanding of mathematical patterns through the use of concrete materials; work sheets containing abstract symbols, no matter how beautifully designed, cannot involve a child's senses in learning the way real materials can.

The other key to learning, of course, is to praise children for what they do and for what they attempt to do, and to ensure that they are not discounted for what they cannot do yet. We know that every child is unique and wondrous, and that each enters the classroom with different personal experiences and levels of math practice. Some have been counting on fingers and toes with their parents since the moment they were born, while others may scarcely have been exposed to numbers at all. As teachers, we know that it is our responsibility to provide our students with positive experiences that encourage them to learn.

Class Ownership of Manipulatives

During the first weeks of school, we suggest you send home a note asking students to bring in items that can be used as math manipulatives. You might want to ask for buttons, keys, beans, rocks, seeds, lids, plastic jewels, and film canisters. Small toys such as matchbox cars, Teeny Beanie Babies, and plastic animals work well too.

While these items are being gathered, introduce the students to the manipulatives you have purchased. Some of our favorites—all of which are easy to find—are Unifix Cubes, tangrams, tiles, links, magnetic numbers, and three-bear (small, medium, and large) counters. Show the children the catalog from which you purchased the manipulatives; this makes a connection to text and print. Tell them how many you purchased and what they cost; this establishes connections to real life and other curricular areas. With the students, make a list of all the manipulatives you use. Make a graph that shows which manipulatives were brought from home and which were purchased, and have each child write his/her name next to the manipulatives he/she brought from home. All these activities create student ownership of the educational process and its tools. Place your manipulatives in boxes or tubs and label each group clearly with a picture and text.



Free Exploration

Free exploration is a cherished time for children, as they love to play. If students haven't had a chance to play with the manipulatives before more formal teaching begins, they will not be able to focus on the mathematical concept you are trying to teach. They will be fascinated with the manipulative itself, and it will actually become a distraction rather than an instructional tool. On the other hand, if you first give a group of children time to play with manipulatives such as buttons, you will encounter varied responses that may be useful to keep in mind later.

Some, fascinated by the feel, sight, and sound, may simply run the buttons through their fingers. Others may begin to count or sort the buttons by an attribute such as color or shape. Still others may recount or create a story about a button or even lay the buttons down to create a picture or building. If you do not give children this chance to explore and create, they will make the time to do so—and it will usually be during your math lesson!

As the children are exploring, use this time to observe and assess. Who already has a firm concept of sorting and classification? Who tends to design and build? Who is

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having difficulty deciding what to do? Which children enjoy working with others and which prefer to work alone? Free exploration lets children see the teacher and their fellow students model the use of manipulatives in a creative and nonthreatening manner. It lets children build familiarity and confidence with manipulatives before using them to move into more abstract mathematical concepts, and it gives the teacher insight into each student's abilities and behaviors. We can't overstate the value of free exploration in your math program.

Patterning

Patterning is an important element in a balanced, effective math program, as pattern is the underlying theme of all mathematics. Developing a keen sense of pattern can have a vital and profound effect on a child's ability to understand the fundamental concepts of mathematics. At the beginning level, you might ask children to identify, describe, and extend simple patterns. Some patterns may be visual, some auditory, and some physical. At this level, you would typically show the students a pattern that repeats itself at least three times. You would then encourage the children to describe each pattern by referring to its shape, size, or color.

As students become comfortable with simple A-B-A-B-A-B patterns, you can introduce them to more complex patterns and activities. It is vital that you assess students throughout this process. Moving a student into complex patterning before he/she has mastered simple patterning will only result in further confusion. On the other hand, keeping children at the simple pattern level when they are ready to move on will create boredom. Individualize the instruction to meet the needs of each student, and diversify it to address a wide range of skills, and you'll create a fun and stimulating environment for learning.

Number Sense

At the beginning level, young students start to develop a real sense of what a number is. They can achieve this in part by participating in activities designed to compare and contrast sets of numbers. Children learn to identify which set has more, fewer, or an equal number of pieces. They practice counting, recognizing, representing, naming, and ordering numbers of objects; answering simple addition and subtraction questions; recording them; and creating new sentences to show similar concepts. They also learn to use estimation strategies. Again, manipulatives play an essential role in helping children connect abstract number symbols with their concrete meanings.

Counting is a difficult concept for many children. They simply do not understand why the number 1 must come before 2 and why 11 and 12 are not called "oneteen" and "twoteen." These are logical questions. To further complicate things, numbers take both word and numeral form. No wonder children find these concepts confusing!

Try teaching the numeral form and number word together, so that children learn that the two forms represent the same thing. Introduce the numbers one at a time to avoid

overwhelming your students, and be sure to provide plenty of opportunity for repetition and practice. Only when he/she has done it over and over again will a child learn to count and sequence arbitrarily ordered number words.

Even after a child is able to count and recognize numbers to ten, he/she may not be able to transfer that knowledge to objects in a group. Here manipulatives are vital, as they give students a concrete representation of what each number stands for. Counting with manipulatives helps develop one-to-one correspondence and allows the child to visualize the concepts of "greater than" and "less than." Using concrete objects helps a child begin to see why one comes before two and two before three, and to recognize that the higher the number, the greater its value.

The next step in the progression of number sense is developing an understanding of the different combinations that can add up to each number. The number five may take the form of two and three, one and four, or five and zero. Teach addition through the use of manipulatives first, and then later the student will be able to record number sentences abstractly in symbolic form.

Subtraction is taught in much the same way as addition, beginning with manipulative examples of subtraction sentences. Pull a group of four children to the front of the room and then send two away. How many children remain? Once again, you're using manipulatives to show each number sentence as a set of objects, then teaching the children later to transfer this understanding to the more abstract symbolic form.

You must also introduce children to larger numbers, and this is where estimation comes in. Give the students a large quantity of objects and ask them to estimate the total. Show them how to count the objects by ones, twos, fives, or tens to reach the correct answer. You can use this type of activity to address very large numbers in a whole-group, nonthreatening manner. It also helps if you break large numbers down into their smaller base units—pointing out, for example, that the number 25 is two tens and five ones. This helps children to visualize and understand the size of the number. At first a child's estimations may seem unreasonable, but with practice and repetition their estimates will become more and more accurate, and so will their understanding of skip counting.

Algebra and Functions

Sorting and classification skills are important elements in teaching children to think analytically and to express their thoughts in a clear and concise manner. As they build their skills, they learn to sort and classify items by intangible factors, each describing a particular property that a group of objects has in common. These are referred to as *attributes*. Children must identify and describe the attribute by which they have sorted and classified objects.

Measurement

Students can complete measurement activities using either standard units of measurement such as inches, centimeters, and pounds or nonstandard ones such as Unifix Cubes or blocks. Either way, these activities promote the understanding that objects have properties such as length, weight, and capacity. Measurement activities also include units of time, such as seconds, minutes, hours, days, months, and years. In this part of the curriculum, it's important to teach comparisons of measured objects, making sure students understand attributes such as "taller," "shorter," "lighter," "heavier," "holds more," "holds less," and so on.

Daily Calendar

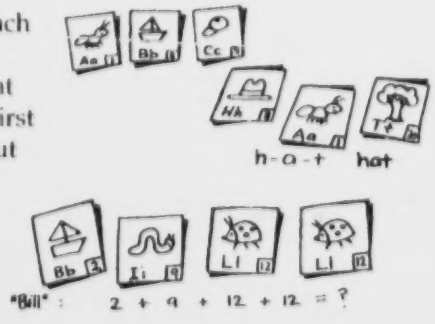
Many teachers begin each day with a calendar and daily news. Some teachers prefer to *end* the day with the calendar. It doesn't matter when you schedule these activities, only that you consistently include them as part of the classroom routine.

To introduce daily news to the class, try writing on a transparency a list of what is to come (or has been learned) that day. Then display the list with an overhead projector. The transparency is easy to write on, the projection is large enough for all the children to see, and you can make a paper copy of the transparency to place in a class book. The children will enjoy reading this book, as it becomes a record of class learning and special events. If you do not use an overhead projector, then try using chart paper or a white board.

No matter what medium you use, the key to presenting daily news is modeling by writing aloud. Speak as you write, sometimes pausing and sometimes thinking out loud. Always begin your daily news with the date. Write it in full: "Today is Thursday, May 8th, 2003." Later in the year, try writing the date at the top of the page in numeral form: "5/08/03."

Of course, you'll also want to carry the date concept over to your calendar board. A large bulletin board is a good place for the class calendar and other activities. Here are a few ideas:

1. **Alphabet Line.** If you include alphabet cards on your calendar board and place a number at the bottom of each letter card, you'll be able to play many letter/number games: "How many numbers are in the alphabet? What number letter are we learning this week? What is the first letter in the alphabet? What is the 20th letter? If you put letter number 1 in front of letter number 20, what word do you have? The word is 'at.' What number letter can we place in front of 'at' to make a new word? Number 8? What does that spell? Yes, that spells 'hat.' " You get the idea. This can become a fun addition game as well. Have each child add up the value of his/her name or the value of each spelling or high-frequency word you are focusing on that week.



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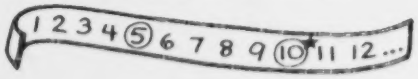
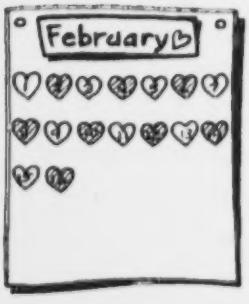
2. **Day in School.** On a strip of adding-machine tape, write the number of days the students have been in school. Add a number each day. Write the even numbers in black and the odd numbers in green; this makes it easier for children to skip count by twos and to recognize odd and even numbers. Put a circle or box around each number that you can count to by fives and a star by each number that you can count to by tens.



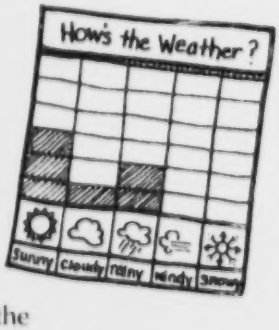
3. **Days of the Week.** Use a seven-pocket chart that lets you place the day of the week and the date in the pocket. This allows the children an opportunity to use another graphic organizer to classify day and date.

4. **Monthly Calendar.** Use a monthly calendar grid, so that students can see the name of the month and the date. Beforehand, take thematic calendar pieces (available at local educational supply stores) or die cuts and arrange them in a pattern. The February pieces might alternate between pink and white hearts, for example, or between hearts and Cupids. Then place each date, in order, on one of the pieces. Now you're ready to go. Each day a student adds the date to the calendar grid, and as the week progresses, the class guesses the pattern: "The first day is a green Christmas tree, the second is a yellow bell, the third is a blue gift box, the fourth is a green Christmas tree, and the fifth is a yellow bell. Can you guess our monthly pattern?"



5. **Class Piggy Bank.** Create a class piggy bank and invite students to bring in spare change. Count the change each day and write the total on a sentence strip above the bank. ("We have 2 dollars and 12 cents.") At the end of the month, give the money you have collected to a charity or buy new manipulatives or books for the class.

6. **Weather Graph.** Create a weekly or monthly grid on which to graph each day's weather. Then record how many days are rainy, how many snowy, and so on, to teach graphing skills.



7. **Question of the Day.** Create an envelope full of questions on slips of paper. Possibilities might include: Is this an odd or an even day? How many days long is the weekend? How many days are left until the end of the month? What is the fifth day of the week? Make it part of your calendar routine to pull out some of these slips of paper and ask the students the questions.

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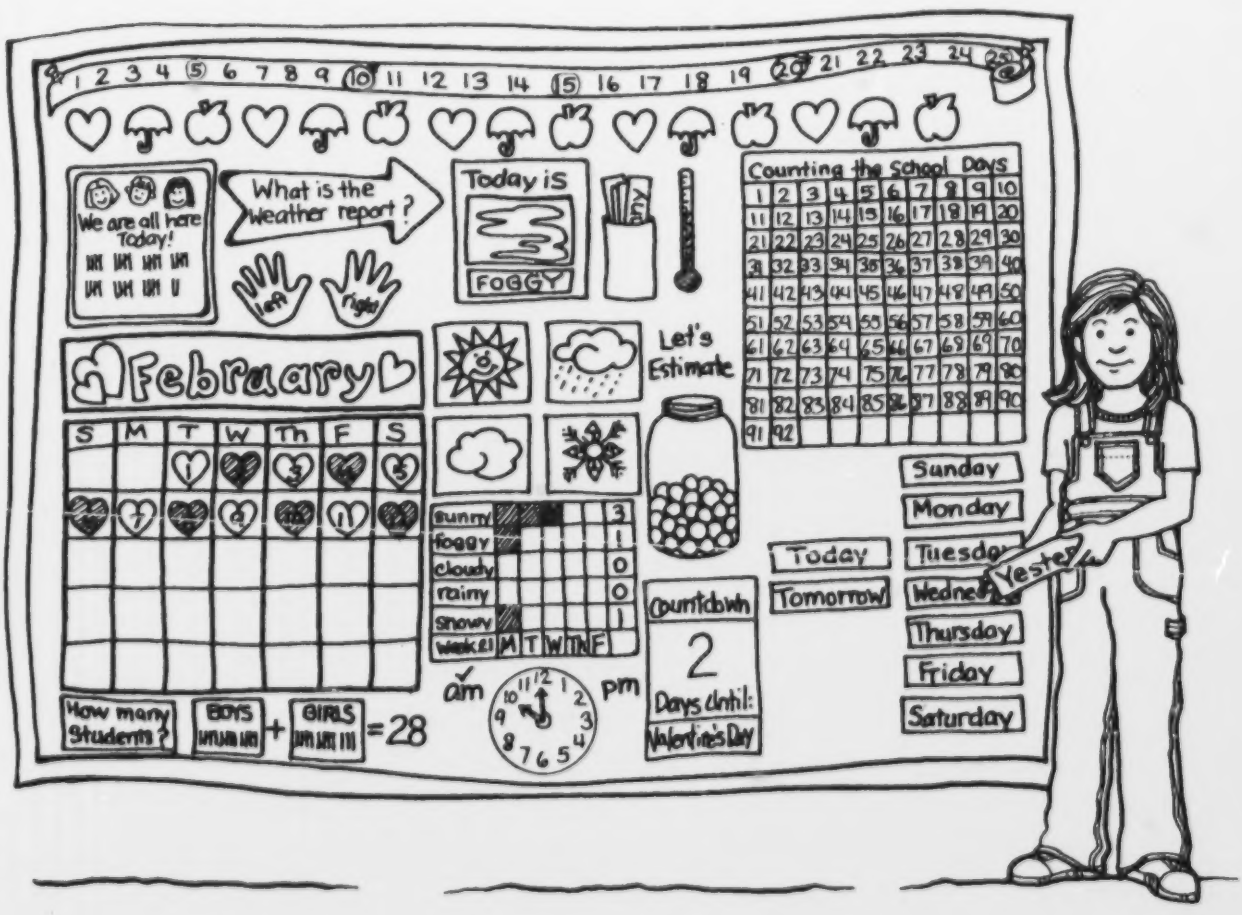
8. **Tally.** Tally the days of the month or year. You may want to make your tally marks on a seasonal cutout or chart.

9. **Place Value.** Use manipulatives such as base-ten rods and Unifix Cubes to represent the date.

10. **Left and Right.** Trace your left hand and place the print on the left side of the chalkboard, along with the word "left"; trace your right hand and place the print on the right side of the board with the word "right." Ask questions that involve relative positioning: Is the flag to the left or the right of the chalkboard? Am I standing to the left or the right of the door?

These are just a few of the wonderful activities that can be practiced each day at the calendar board.

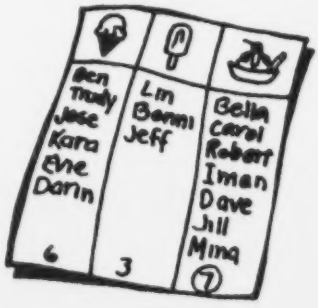


Geometry

Young students must be able to identify and describe a variety of common geometric objects, including circles, squares, rectangles, triangles, ovals, diamonds, cones, cubes, and spheres. To describe these objects, they will need to use common attributes such as position, shape, size, roundness, and number of corners. Challenge students to explore shapes further by using geoboards, tangrams, and so on.

Graphing and Data Analysis

Graphing is a problem-solving tool used to demonstrate relationships. Students learn graphing concepts through exploration, sorting, and classification. With young children, you can use many different types of graphs, including picture graphs, pie graphs, and column graphs. Once they've mastered these early forms, older students can learn to work with graphs that are more abstract and symbolic in nature.



Mathematical Reasoning

Mathematical reasoning means that students can make independent decisions about how to set up problems, solve those problems using manipulatives or graphs, and explain to you the means by which they reached the solutions. The process of mathematical reasoning culminates in that wonderful moment when everything comes together and students are genuinely able to demonstrate mastery of math concepts.

Math Centers

Teachers know it is important to give their students as much opportunity to explore math as possible, and it is common for a teacher to become frustrated in trying to manage a classroom while providing quality small-group instruction time. Math centers in the classroom can offer a solution to this time-management dilemma. The key to success with these centers is to introduce them thoughtfully, one at a time, at the beginning of the year. Be sure to set and maintain high expectations for student behavior at the same time. Model the use of each center—and then model again! If you follow this process, the students will impress you with their capabilities and with their ownership of the learning process.

Many wonderful books are available that offer ideas and activities for learning centers. Among the resources you might use, either in math centers or as the basis for independent activities, are board games, flash cards, magnetic numbers, story boards with manipulatives, pattern cards to reproduce and extend, tangram puzzles, geoboard designs, pattern beads or links, math concept books, student-made books, and math journals. Activities can include number art, number formation practice, student question tallies, and much more.

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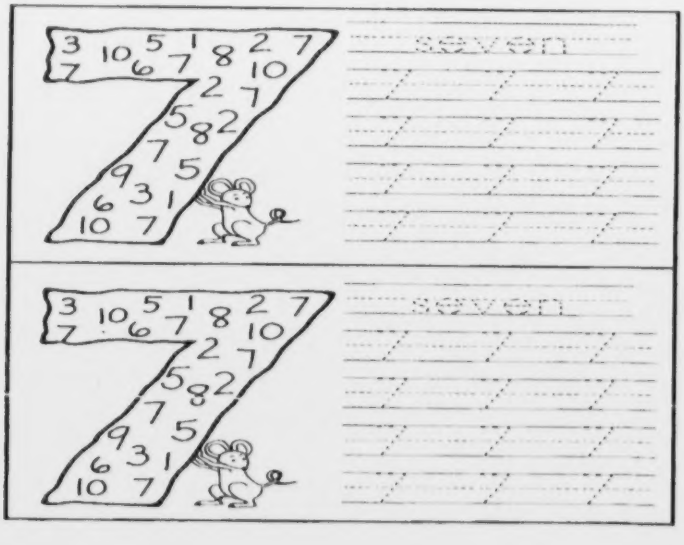
The Parent/Home Connection

Because parents need to know what the expectations are for their children as learners, it is important to inform them about current educational research and practice. Many schools provide an opportunity to do this at orientation, a back-to-school night, or a curriculum night. Take advantage of these occasions to explain to parents the meanings of terms like "sorting," "graphing," "nonstandard measurement," "literature-based," "patterning," and "math stages." Tell parents about the great books that are available to help their children develop math concepts.

You can empower parents to assist their children effectively outside school, expand on classroom learning, and respond positively to the work that their children bring home. Special family nights at school, during which you model curriculum and instructional methods, can be extremely successful events. During programs such as a "Family Math Night," you can invite parents and students to come and share in activities that are carefully designed and modeled by the classroom teacher. On occasions like these, parents get a chance to see and practice instructional techniques, which they can use again at home while working with their children.

Another wonderful way to involve parents is through collaborative math. Families often enjoy math activities that you send home for parents to complete with their children. The key to creating a successful learning partnership is to get parents involved, excited, and empowered!



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Instructional Resources

- **Nimble with Numbers: Grades 1–2**
  Leigh Childs, Laura Chote, Karen Jenkins (Dale Seymour Publications)
  (This series also includes other books written for different grades. All are highly recommended.)

- **Cereal Math**
  Karol Yeatts (Scholastic)

- **Mathematics Their Way**
  Mary Baratta-Lorton (Pearson Learning)

- **Fun-Filled 5- to 10-Minute Math Activities for Young Learners**
  Deborah Diffily (Scholastic)

- **Instant Math Storymats**
  Mary Beth Spann (Scholastic)

- **15 Easy and Irresistible Math Mini-Books**
  Sheryl Ann Crawford and Nancy I. Sanders (Scholastic)

- **Counting Caterpillars and Other Math Poems**
  Betsy Franco (Scholastic)

- **Math and Literature (K–3): Book One**
  Marilyn Burns (Marilyn Burns Education Association)

- **Growing Mathematical Ideas in Kindergarten**
  Linda Schulman Dacey, Rebeka Eston (Math Solutions Publications)

- **Calendar and Beyond**
  Kimberly Jordano (Creative Teaching Press)

- **Family Math for Young Children**
  Grace Dávila Coates, Jean Kerr Stenmark (University of California)

- **Early Childhood Number Games**
  Alice P. Wakefield (Allyn & Bacon)

- **Creative Monthly Calendars**
  Tracy Jarboe, Stefani Sadler (Crystal Springs Books)

Scheduling Instruction: Getting It All In

The key to every instructional schedule can be summed up in one word: flexibility! Keeping that in mind, and also recognizing that no one schedule is perfect, here are some basic possibilities to help you get started.

Half-Day Kindergarten

8:00	Opening/Roll/Flag/Calendar/Daily News/Word of the Day
8:30	Shared Reading and Shared Writing: Big Book and Poetry
9:00	Rotations: Guided Process Reading/Phonics/Journal/Writer's Workshop
10:00	Recess/Nutrition
10:15	Math
10:45	Art/Social Studies/Science/Centers
11:15	Closing Activities
11:30	Dismissal

Extended-Day Kindergarten

8:00	Opening/Roll/Flag/Calendar
8:30	Word Play
9:00	Shared Reading and Shared Writing
9:45	Recess
10:00	Guided Process Reading and Guided Process Writing/ Phonics/Journal/Writer's Workshop
11:30	Lunch
12:00	Read-Aloud or Silent Reading
12:15	Math
1:00	Social Studies/Science/Art/Centers
1:45	Closing Activities
2:00	Dismissal

First Grade

8:00	Opening/Roll/Calendar/Flag
8:30	Word Study/Phonics/Vocabulary/Spelling
9:00	Shared Reading, Shared Writing, and Poetry
9:30	Recess
9:45	Guided Process Reading and Guided Process Writing/ Seat Work/Journals/Centers
11:15	Lunch
11:45	Read-Aloud
12:00	Math Centers
1:00	PE
1:15	Writer's Workshop/Integrated Language Arts
1:50	Closing Activities
2:00	Dismissal

Section 2

1 2 3 Print with Me: Numeral Practice for Beginners

The following printing practice pages include both verbal and visual cues, to help children learn the correct formation of each number. We suggest that you introduce these practice pages by having students read the directions for the numeral zero, then watch as you model how to complete the practice sheet. After you demonstrate, they should be ready to try on their own.

In addition to the rhymes and the illustrations showing how to make each number, each page also includes an appropriate picture to help students learn number concepts (three seashells for the number three, for example). We encourage you to copy these pages and send the copies home with students for extra practice. You may even want to photocopy and bind complete sets into homework books that the students can complete with help from their families. Using these practice pages, parents will easily be able to assist their children in developing correct number formation skills.

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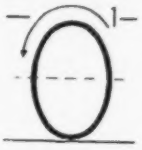
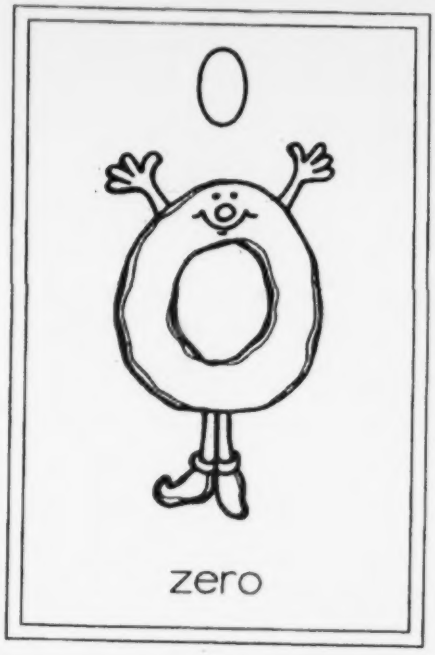
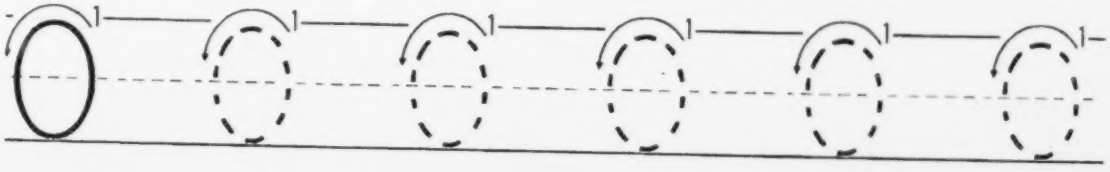
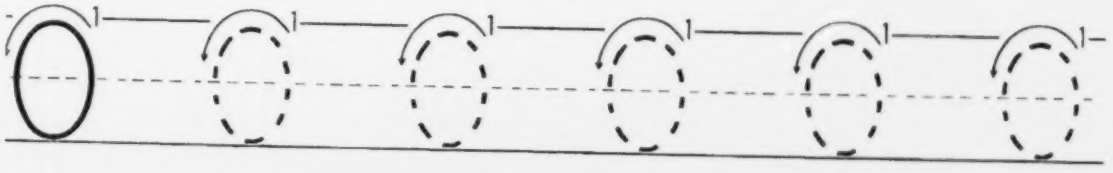
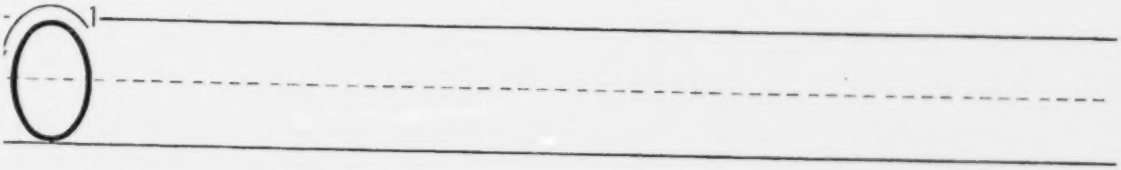


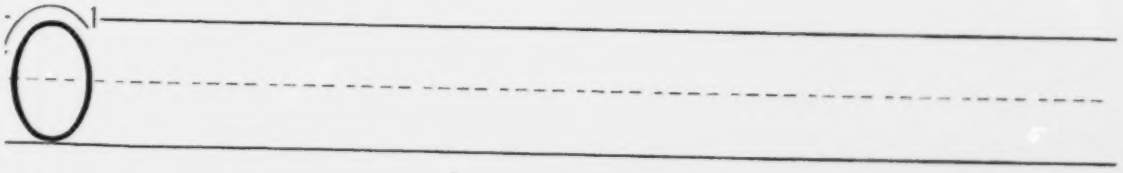
Round and round
Just like an "O"
Now you've made
A big zero











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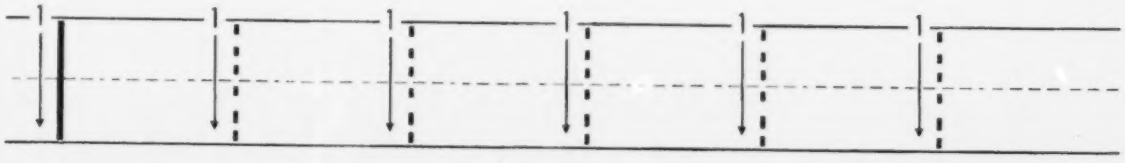
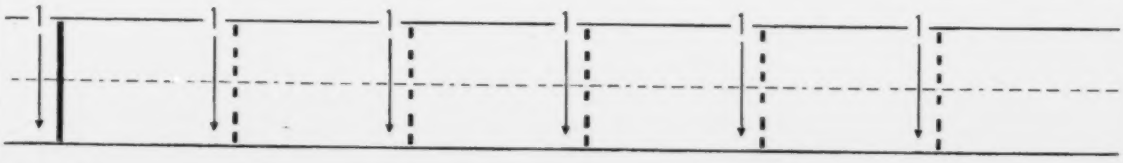
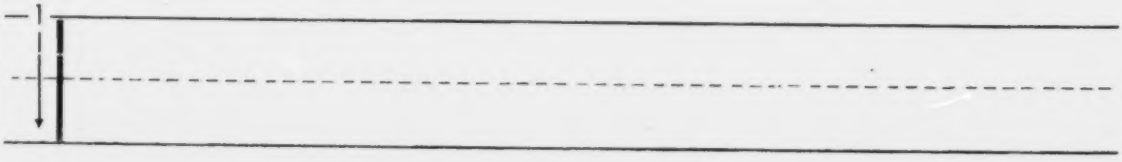
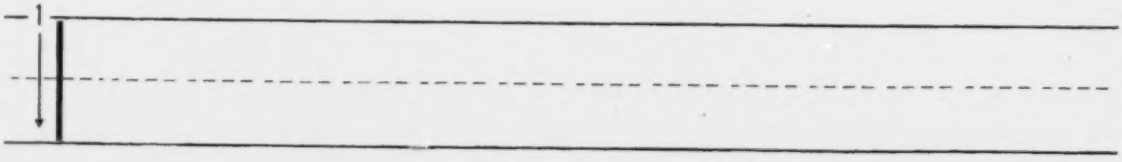
A line straight down
Oh, what fun
Now you've made
The number one









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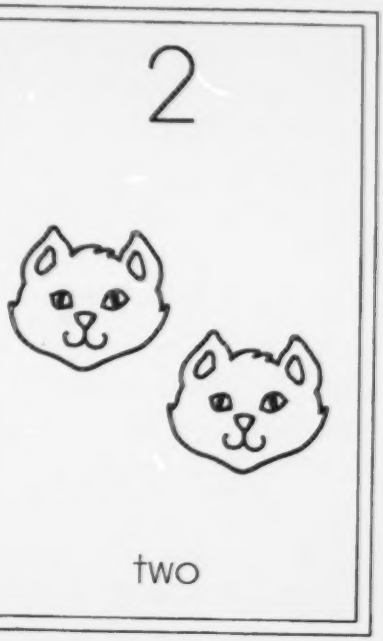
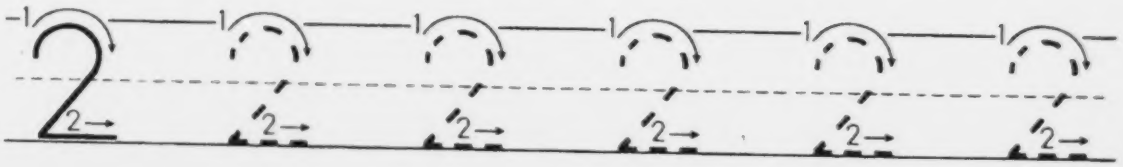
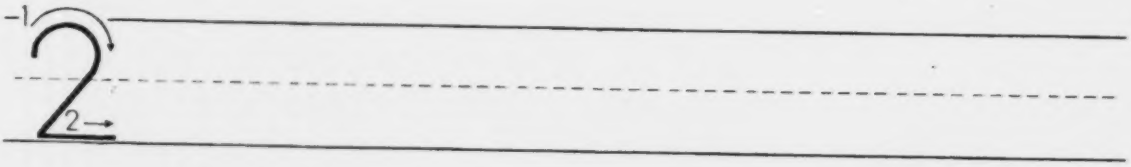
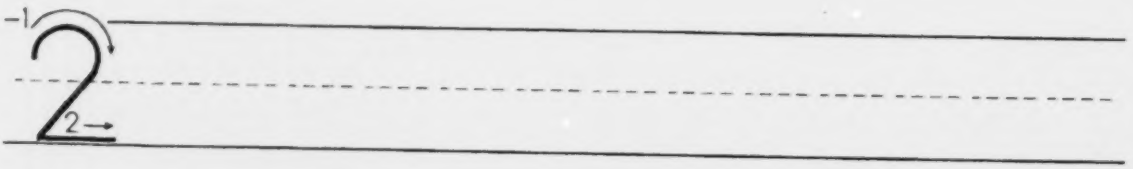


Make a candy cane
And give it a shoe
Now you've made
The number two







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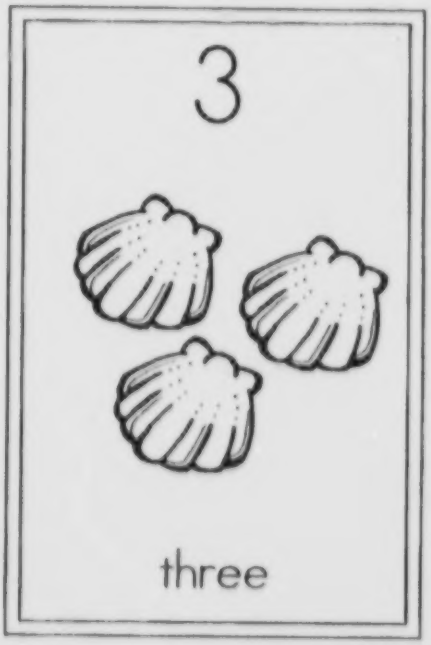
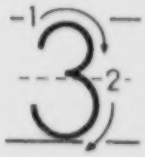
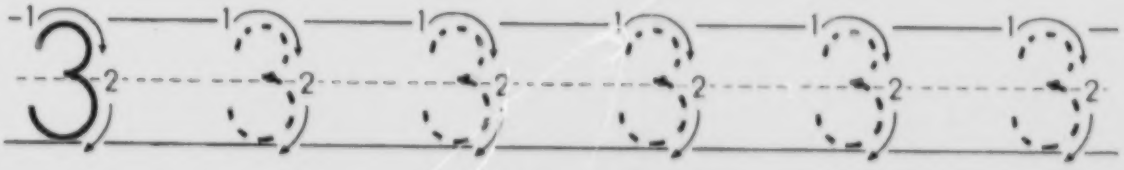
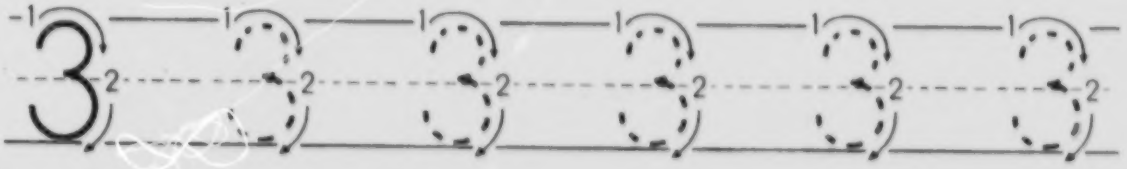
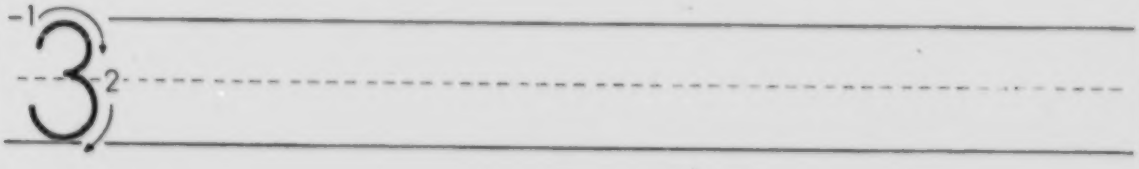


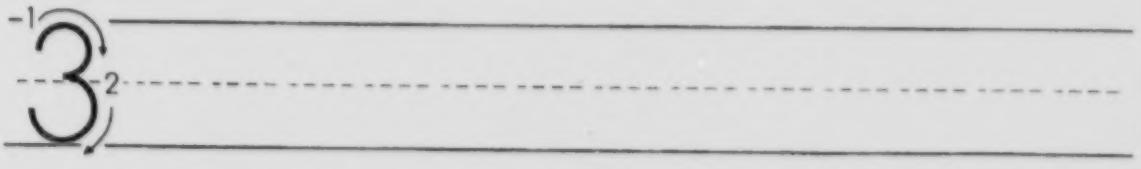


Around and around
Just like a "B"
This is great
I made a three









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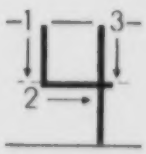
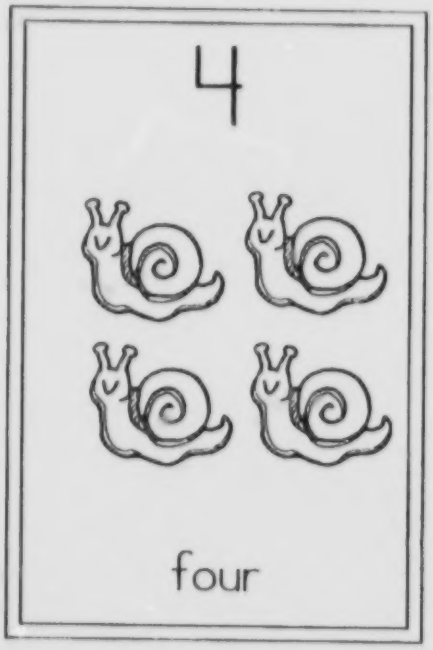
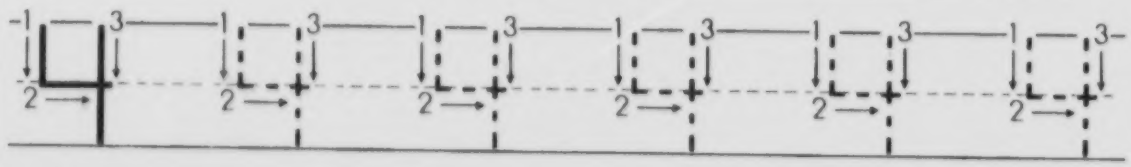
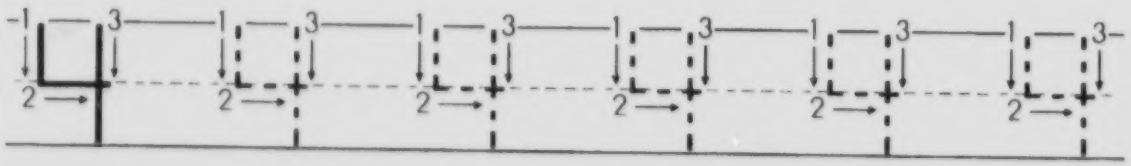
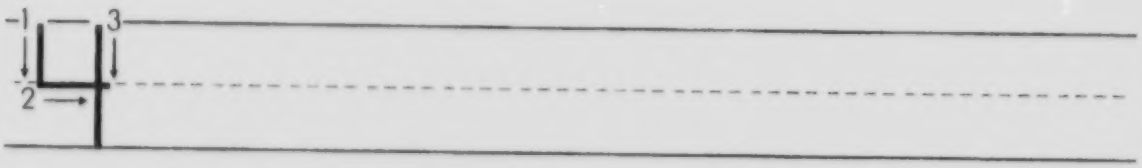


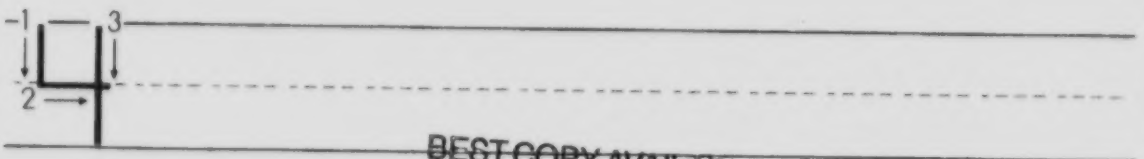
Down and across
Then down some more
This is how
You make a four











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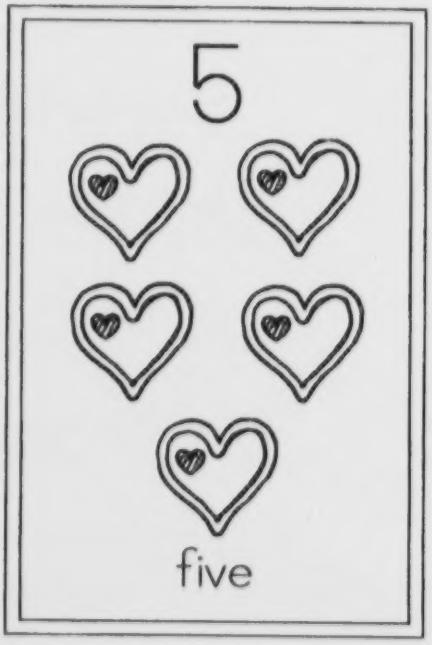
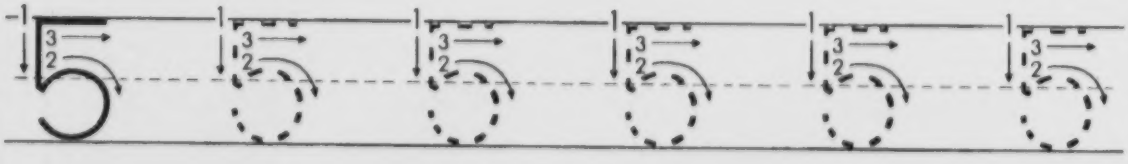
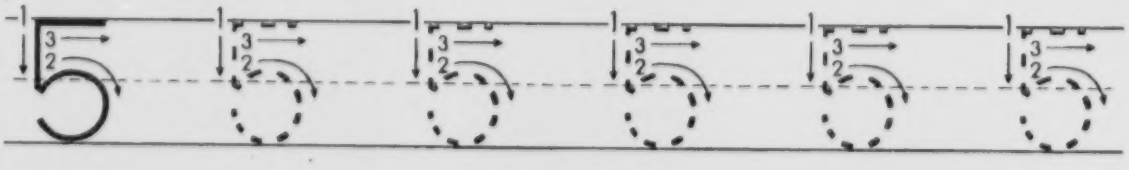
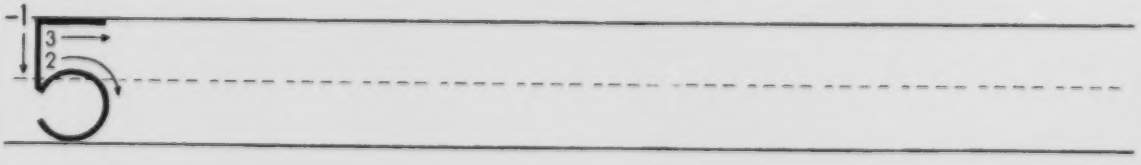
A short line down
Then around like that
Mr. Five
Still needs a hat









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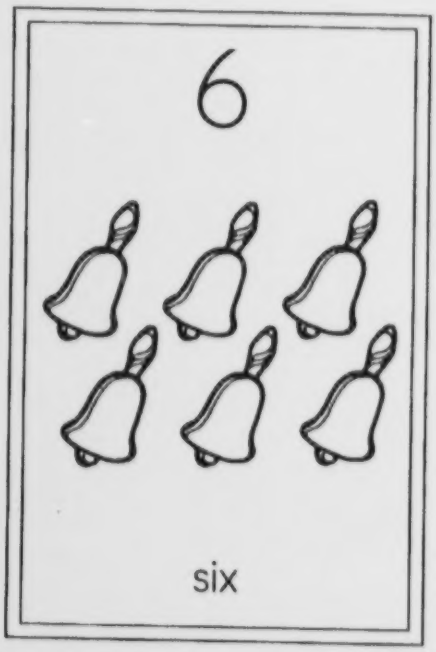
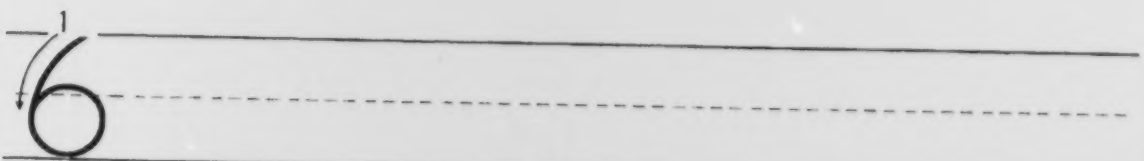
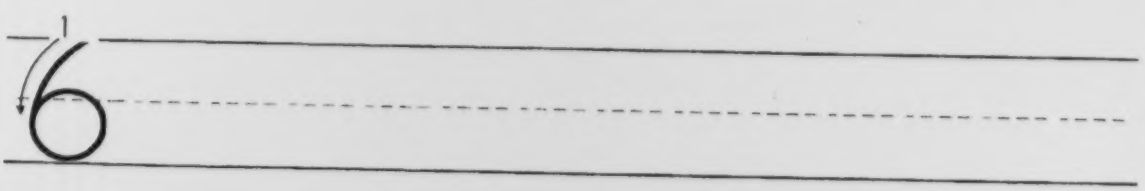


A curved line down
And then around
That's the mix
To make a six





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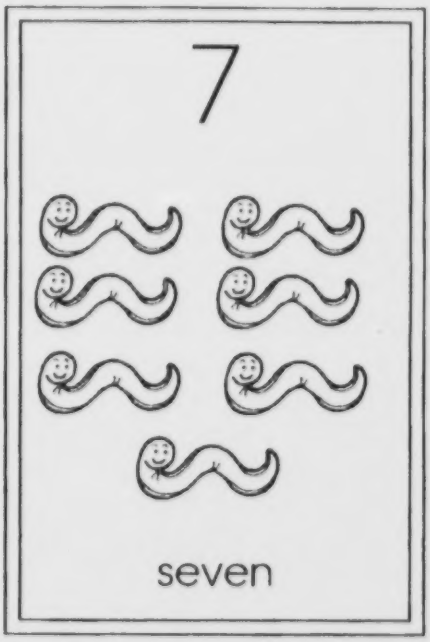
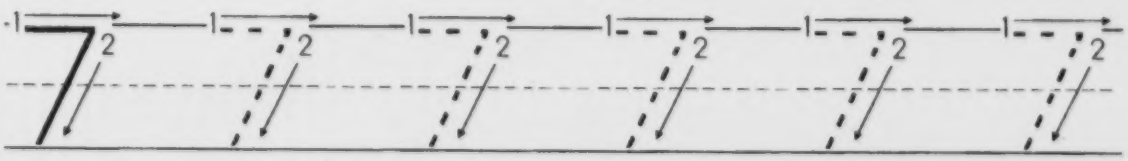
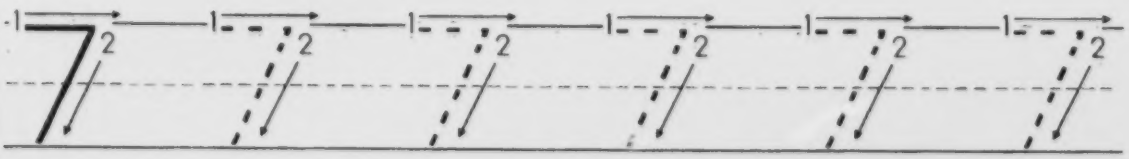
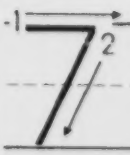
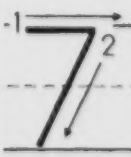
Across the sky
And down from
heaven
That's the way
To make a seven











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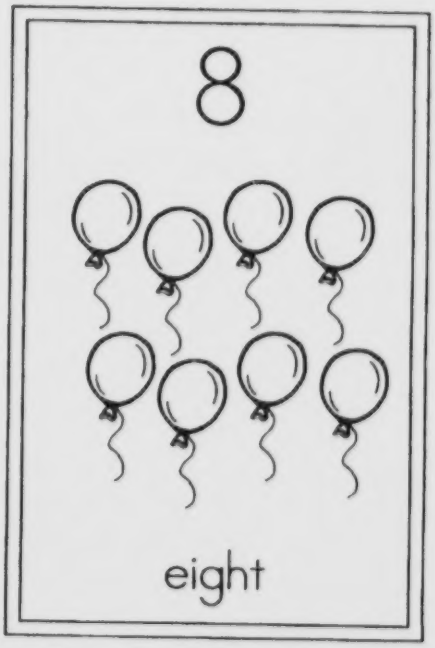
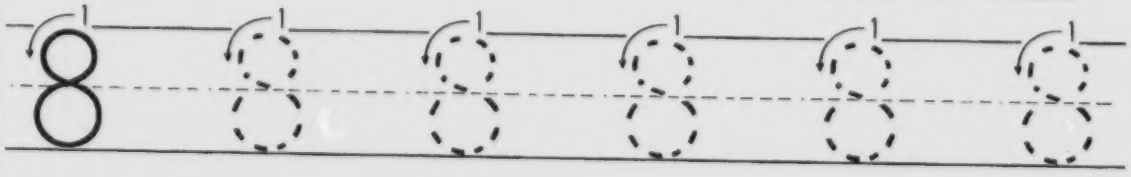
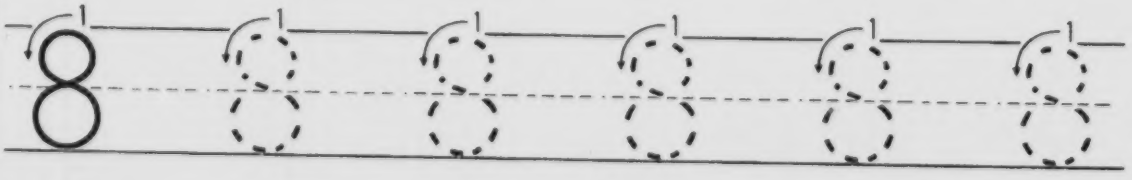
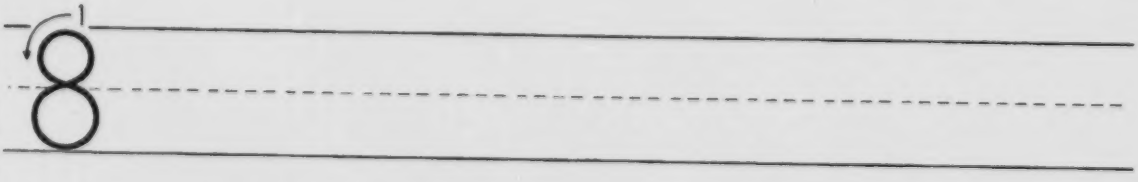
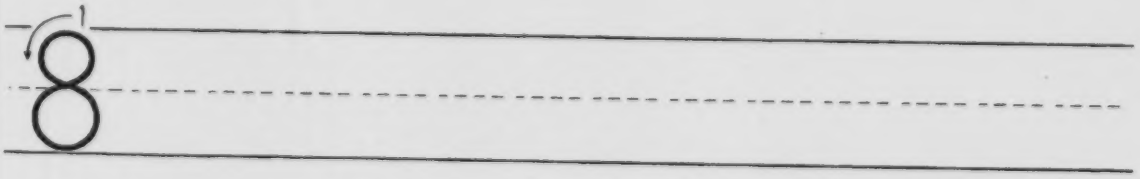


Make an "S"
But please don't wait
Go back up
And make an eight



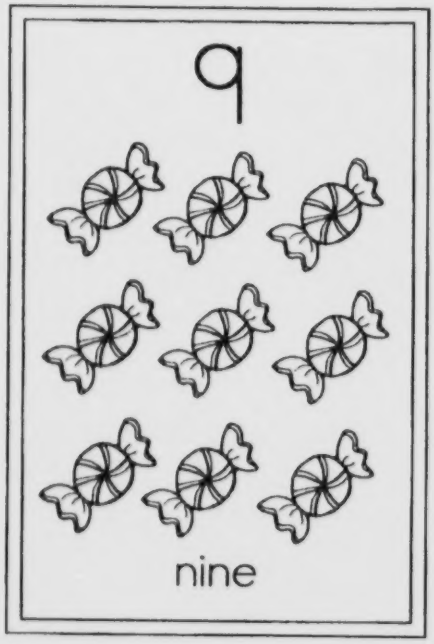


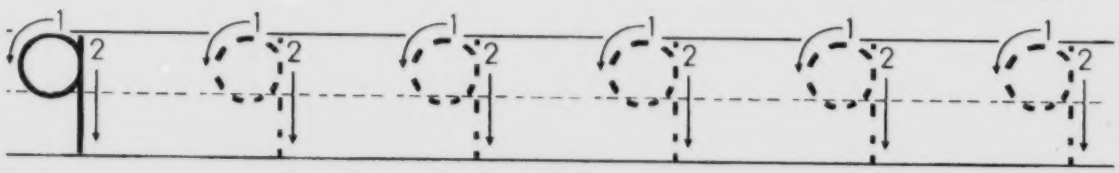


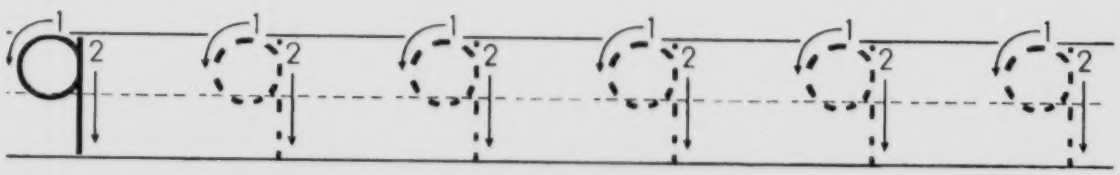


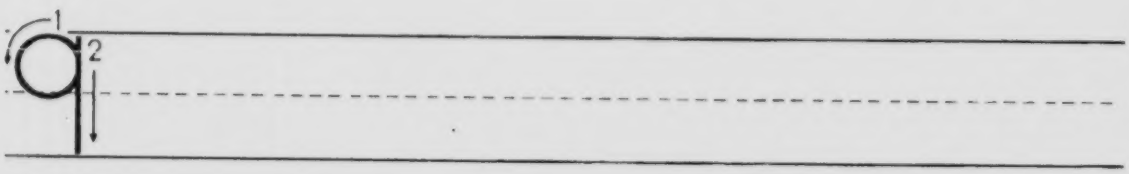
Name _____

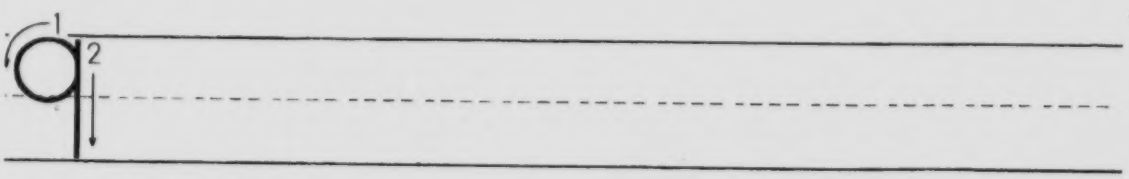
Make a circle
And then a line
Number nine
Looks mighty fine











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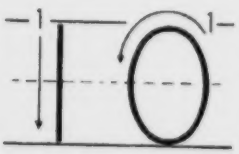
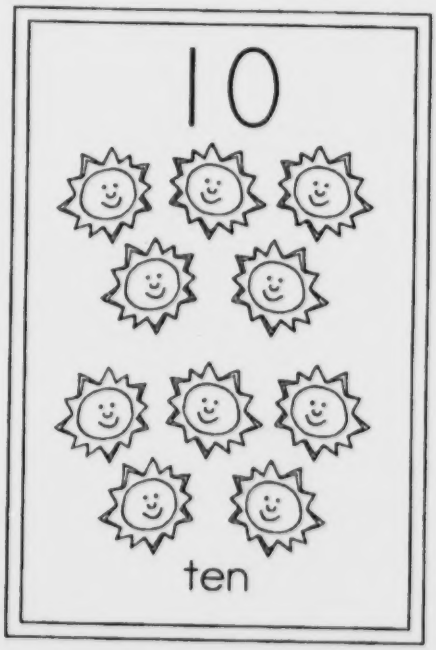
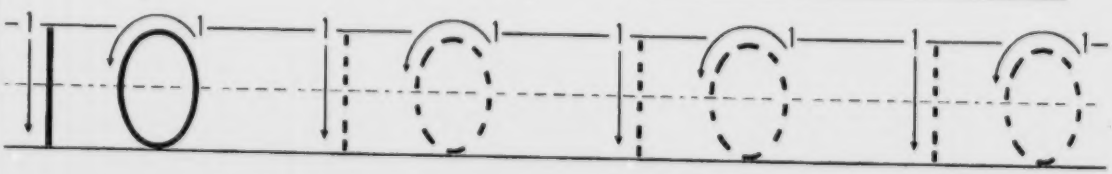
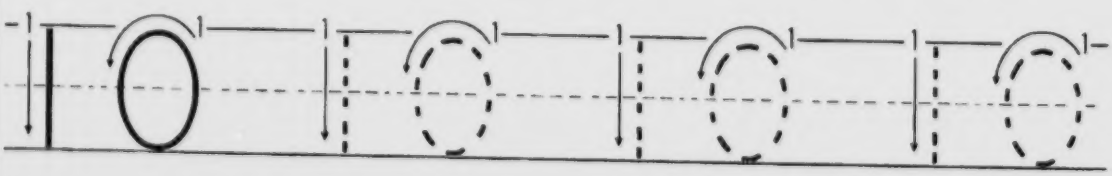
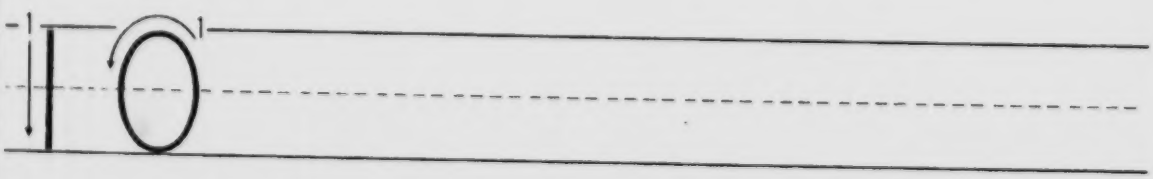


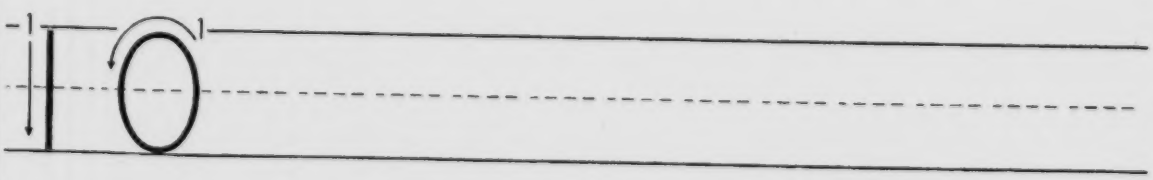
Make a one
And then a zero
Number ten
Is quite a hero











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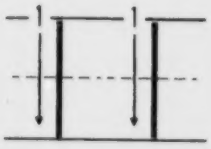
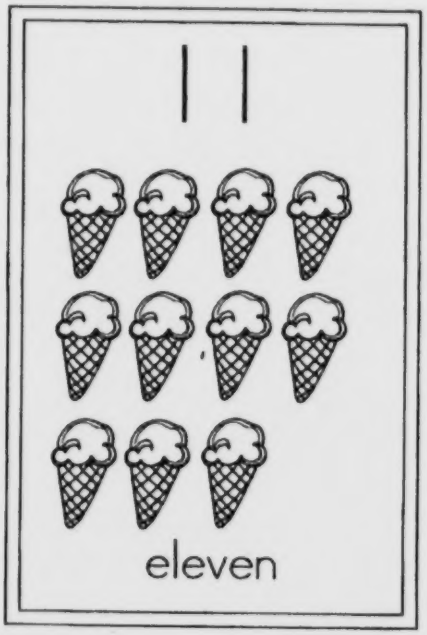


Two straight lines
Side by side
Number eleven
Stands with pride



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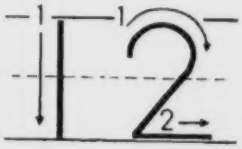
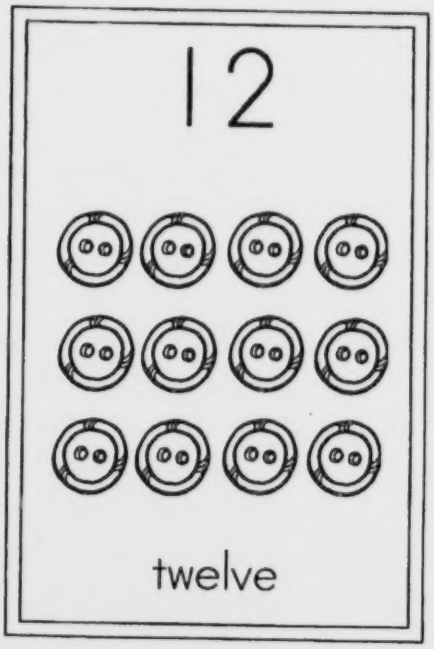


Print a one
Then a two
You've made twelve
So shout Wahoo



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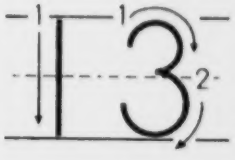
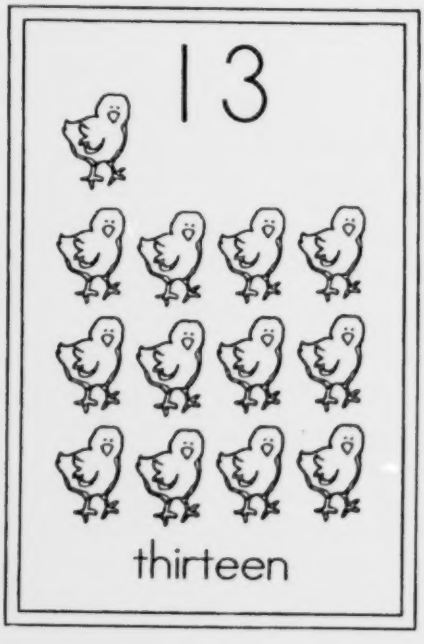
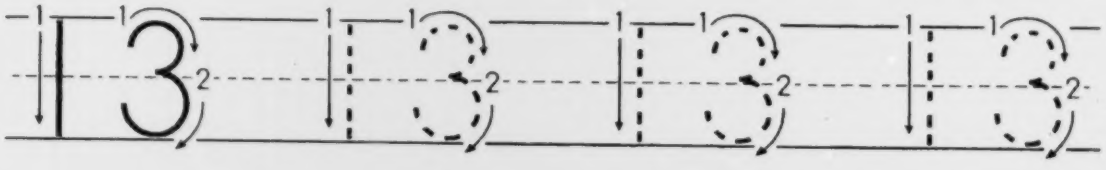
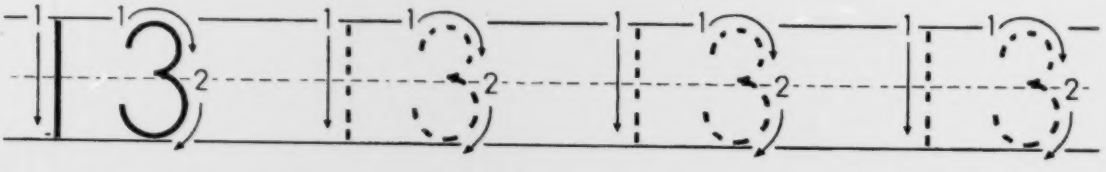
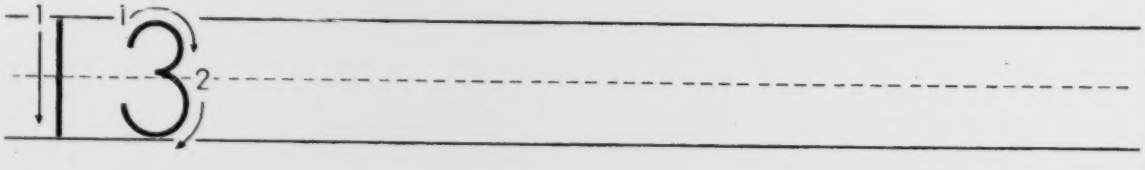


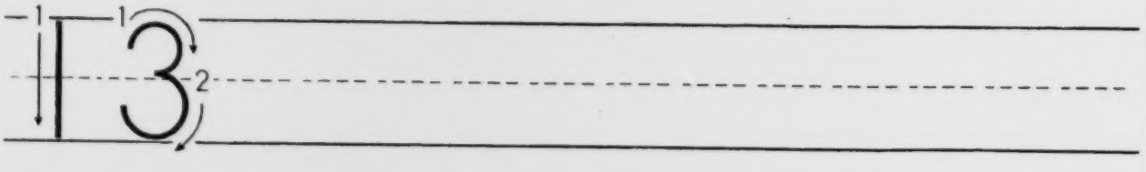
Print a one
And then a three
That's thirteen chicks
So shout Yippee











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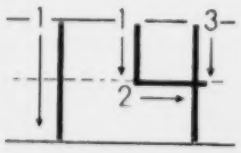
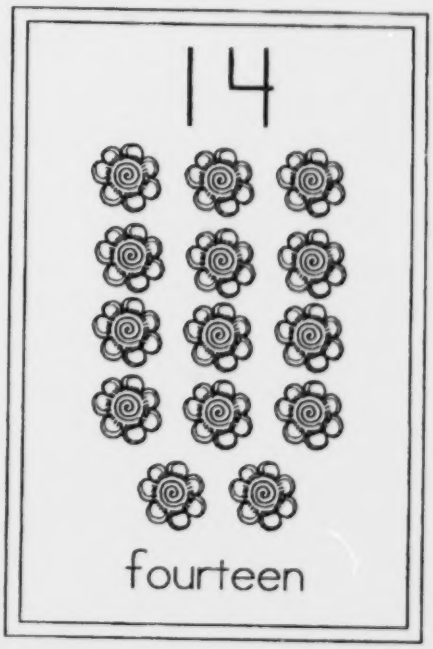
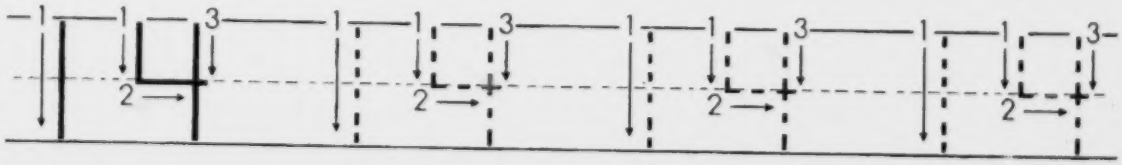
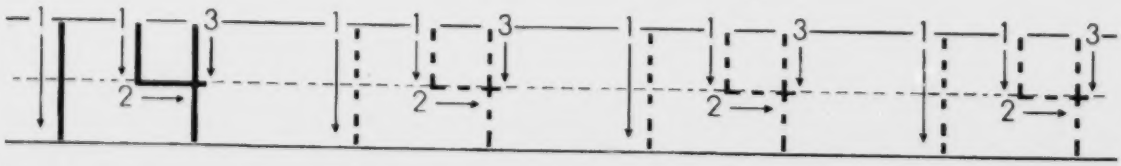
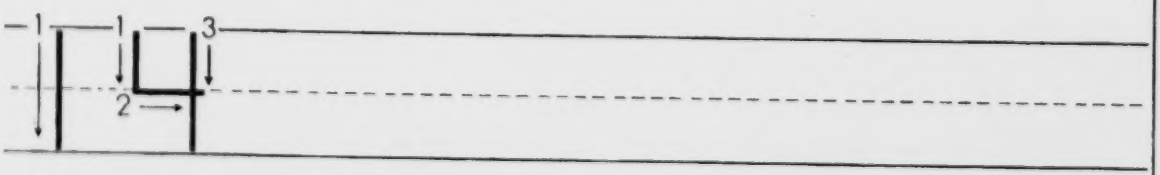


Print a one
And then a four
Fourteen flowers
No room for more

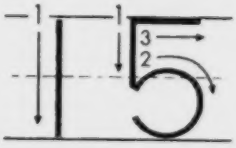




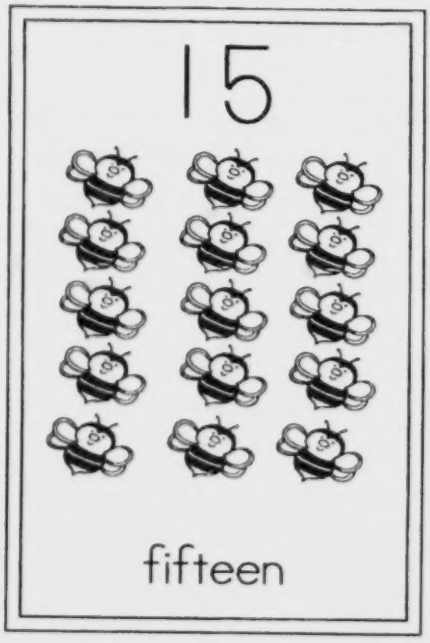


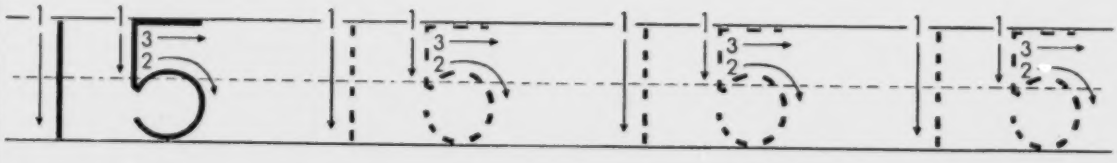


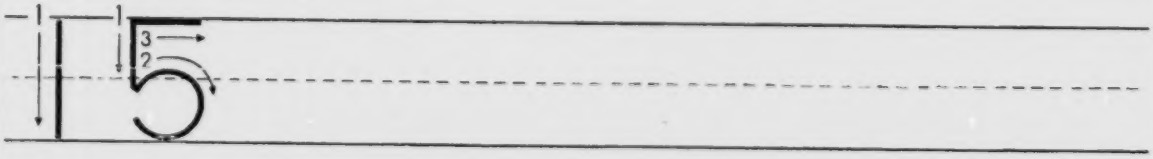
Name _____

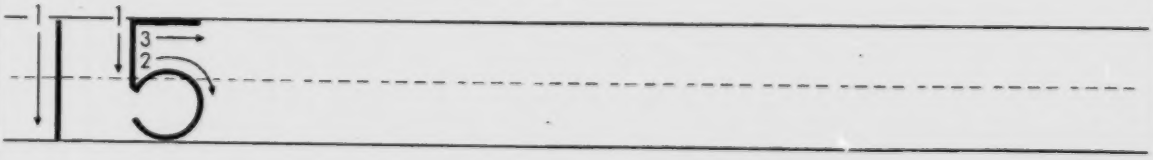


Print a one
And then a five
Fifteen bees
Around a hive









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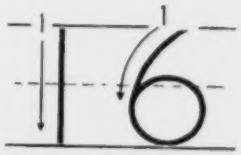
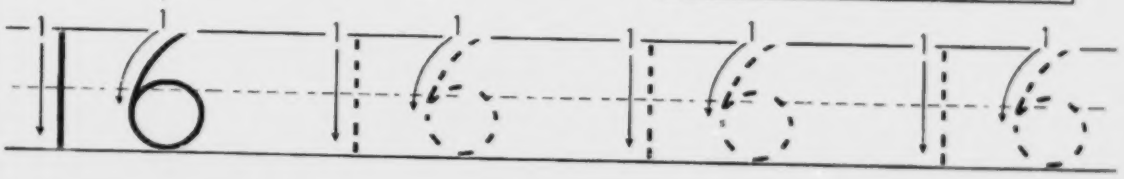
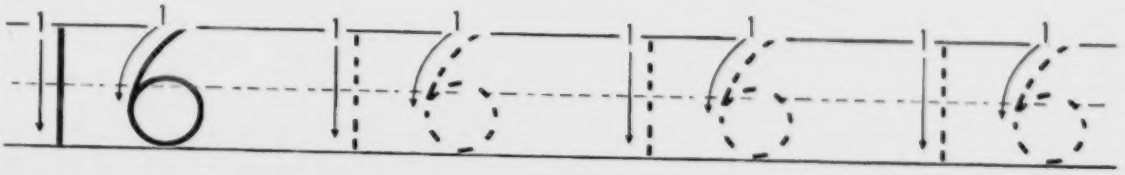
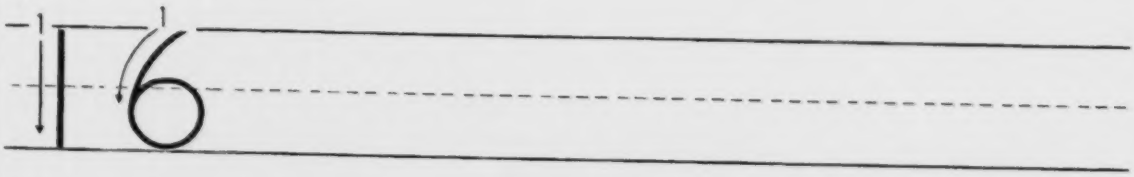
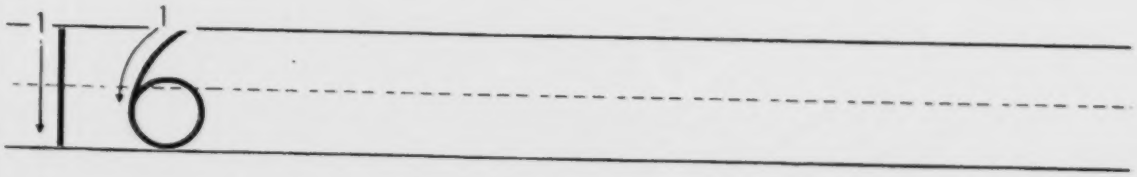


Print a one
And then a six
Add 16 ladybugs
To the mix









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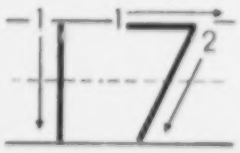
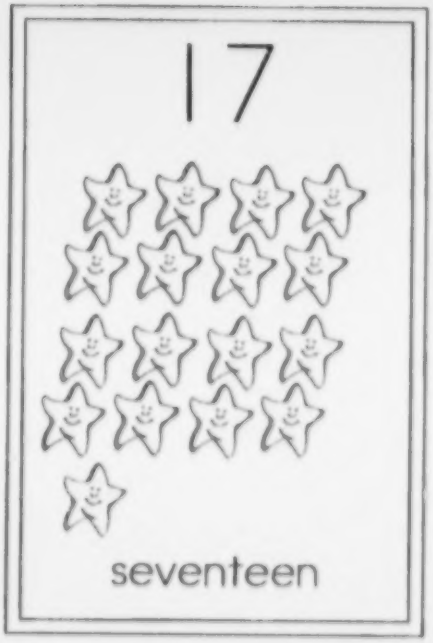
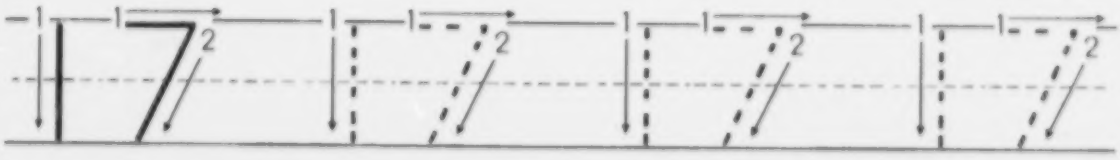
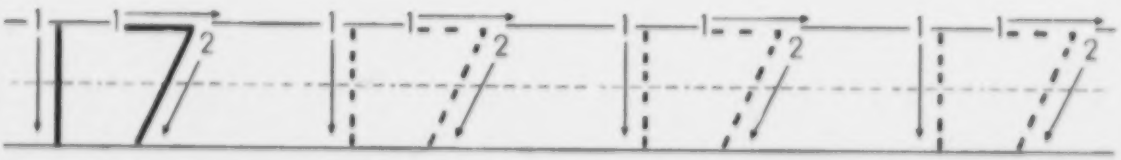
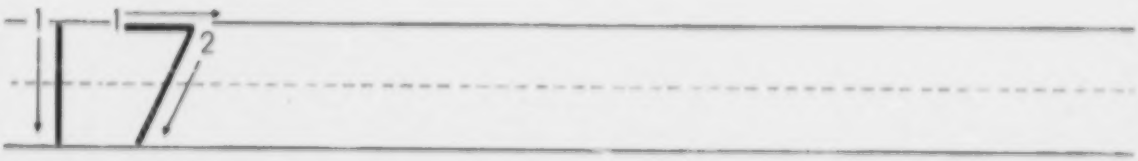


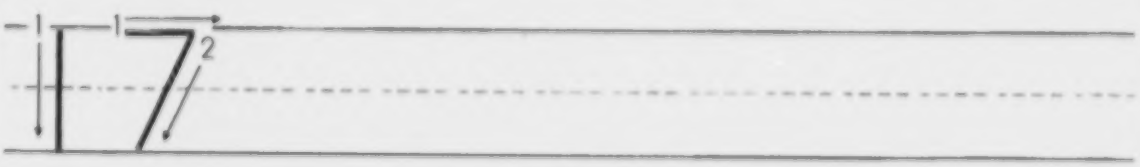
Print a one
And then a seven.
How many stars
Are in the heavens?



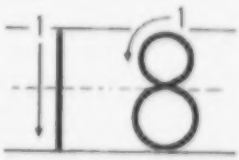




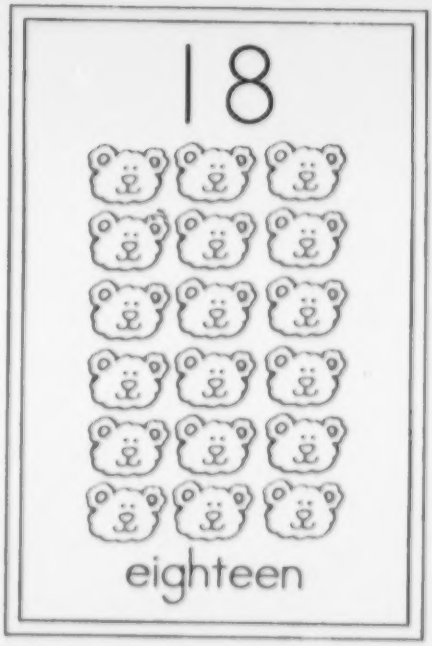


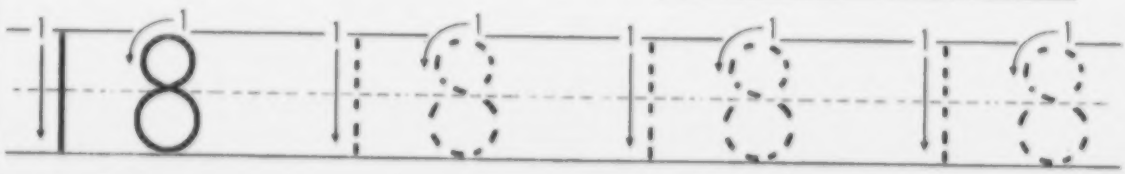


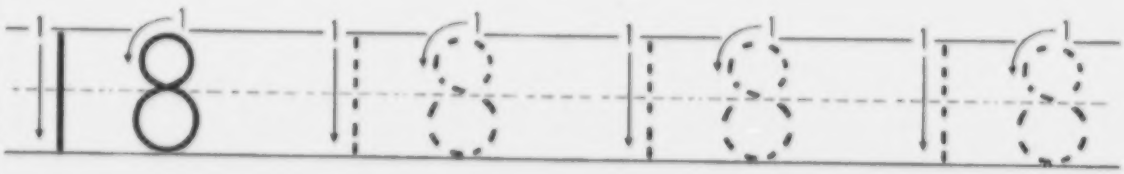
Name _____

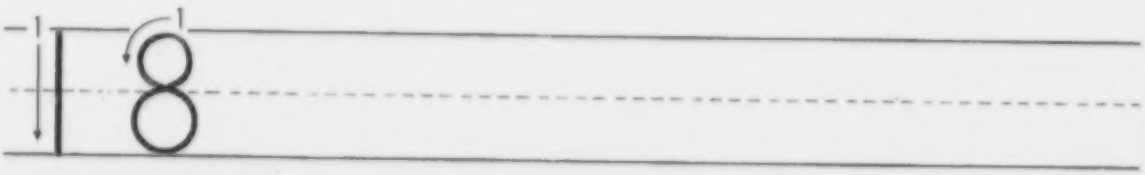


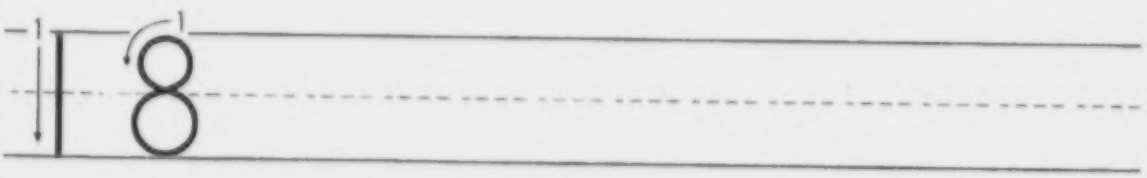
Print a one
And then an eight
Eighteen bears
Stay up late





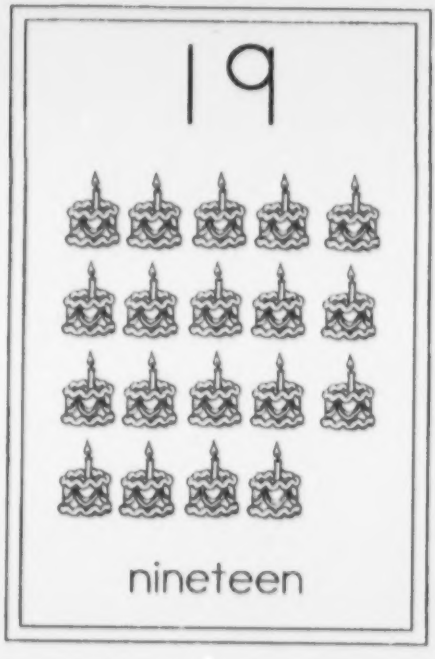


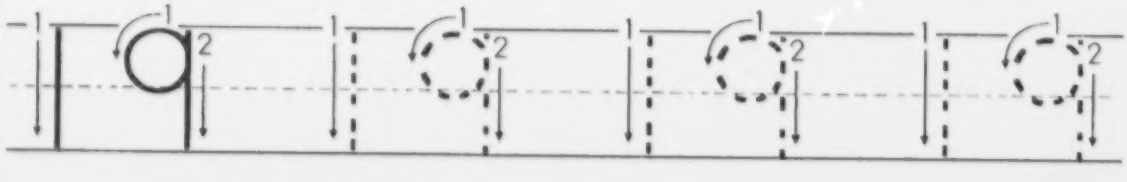


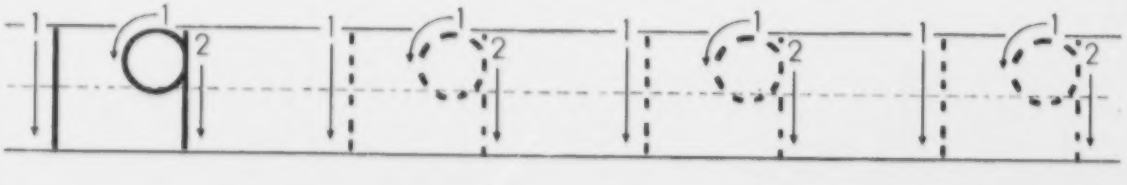


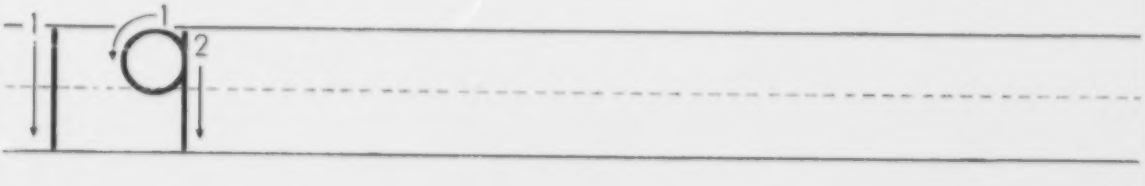
Name _____

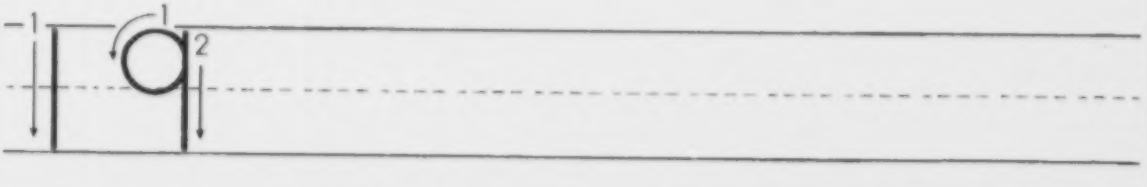
Print a one
And then a nine
Nineteen cakes
Taste just fine



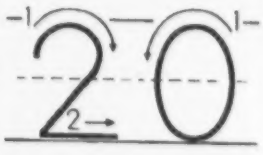




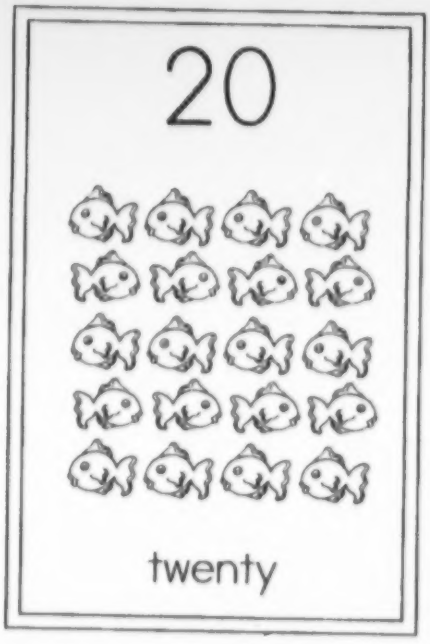


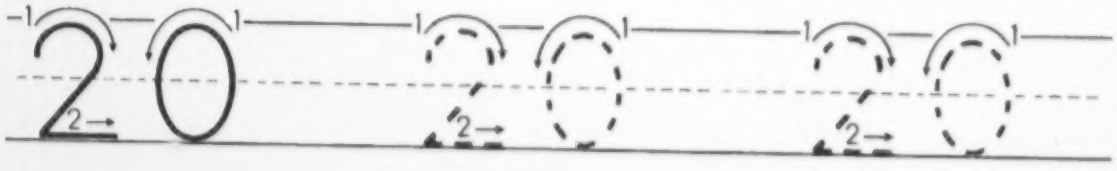


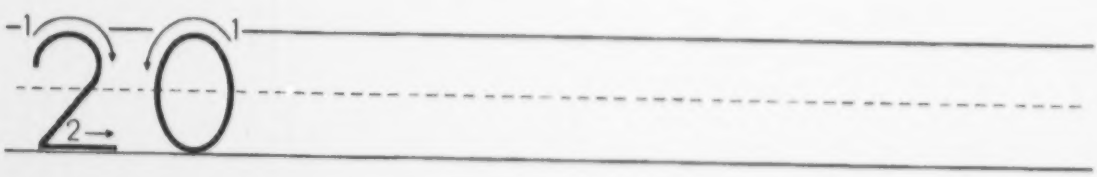
Name _____

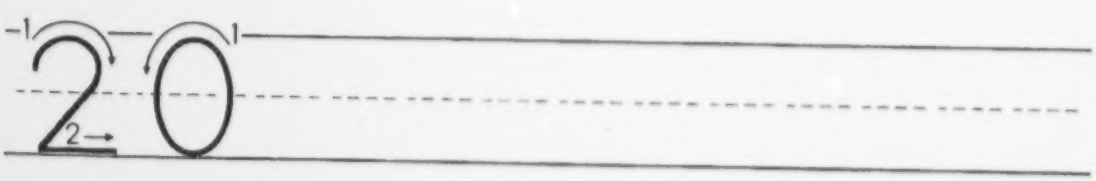


Print a two
And then a zero
Twenty fish
Swimming in rows









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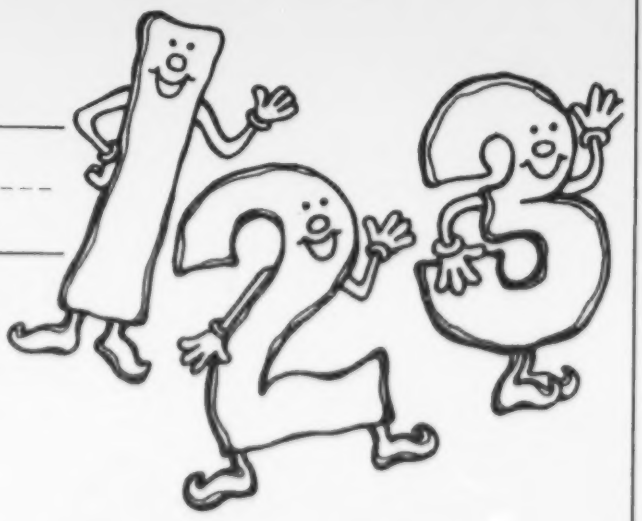


0 1 2 3 4 5

6 7 8 9 10

11 12 13 14

15 16 17 18

19 20

Section 3

1 2 3 Explore with Me: Seasonal Math Mats & Activities

This section contains a set of 12 math mats, each with a different seasonal theme. Math mats may be used during free exploration, in math centers, or in whole- and small-group instruction. You can create them from all sorts of different materials. Try affixing die-cut pictures or wrapping paper to construction paper, then laminating the result. Or use inexpensive themed placemats as a base; they make wonderful math mats. Be creative and have fun with the designs that follow. Here are just a few ideas for ways you can use each of the designs to strengthen math skills:

1. **Apple.** This mat can be used in any unit with a theme of back-to-school, autumn harvest, or plant life cycles. Try using apple seeds or Apple Jacks cereal as fun manipulatives.

2. **Pot.** This mat can be used as a Halloween cauldron, a cooking pot, or a leprechaun's pot filled with gold. You might use real coins, gold-covered chocolate coins, or plastic vegetables as manipulatives.

3. **Pumpkin.** This one is great for celebrating Halloween or the autumn harvest, or when you're studying plant life cycles. Try using pumpkin seeds or candy corn as fun manipulatives.

4. **Cornucopia.** This one can be used in conjunction with a Thanksgiving, autumn harvest, or nutrition theme. Plastic fruits and vegetables, or real nuts and seeds, make great manipulatives.

5. **Snowman.** This mat is great for winter, weather, and Christmas units. Students can use buttons, pom-poms, or mini-marshmallows as motivating manipulatives.

6. **Flower.** This design can be used with spring, plant, or life-cycle units. A variety of plant seeds or sunflower seeds works well as manipulatives with this mat.

7. **Heart.** This one is wonderful for Valentine's Day or with family and friendship units. Conversation hearts work well with this mat.

8. **Umbrella.** This is great for spring, weather, and rain units. Use dots or any other round counter for raindrops.

9. **Jar.** This mat works well with nutrition, harvest, and holiday themes. Try using beans, plastic bugs, coins, conversation hearts, or jelly beans as fun manipulatives.

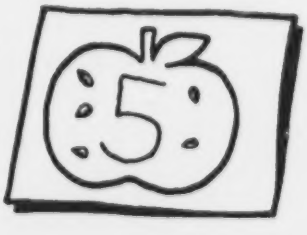
10. **Lily pad.** This one is great for units on amphibians, life cycles, and ponds. Plastic frogs work best as manipulatives.

11. **Beach.** This mat works well with summer, sun, ocean, and water units. Plastic sea life counters or sea shells are appropriate manipulatives.

12. **Playground.** This one's great for school, friendship, and safety themes. Animal or kid counters work well here.

Math Mat Activities

Once you've chosen a math mat that's appropriate for a particular theme, here are just a few of the ways you may want to put it to use:



1. Photocopy a math mat for each student on white copier paper and have each student print the numbers 1 through 10 inside the picture.
2. Make a photocopy of a math mat. Print on the copied math mat the number you're working on and then make a copy for each student on white copier paper. Have each child rainbow-trace the number, and glue that number of objects onto the paper. On the apple mat, for example, we've written the numeral 5, traced the number with different colored crayons, and then glued on 5 apple seeds.
3. Print numerals or math facts on the pictures, then use the reducing function on the photocopier to create copies small enough to use as flash cards. Try using the number cards to practice sequencing: mix up the cards and then have the students place them in numerical order to form a number line.
4. Tell addition/subtraction stories using the math mats. Have students record each math sentence on lined paper. "If I have 3 jellybeans in my jar," you might say as you place exactly that number on the jar mat, "and my mom places 2 more jellybeans in my jar" (as you add two more), "how many jellybeans do I have all together? We know that 3 + 2 = 5. Record that addition sentence on your paper: 3 + 2 = 5." Now start again. "If there are 10 jellybeans in my jar and I eat 4, how many jellybeans will be left? Record that sentence on your paper: 10 - 4 = 6." Again you demonstrate, this time eating the evidence that 10 - 4 = 6.

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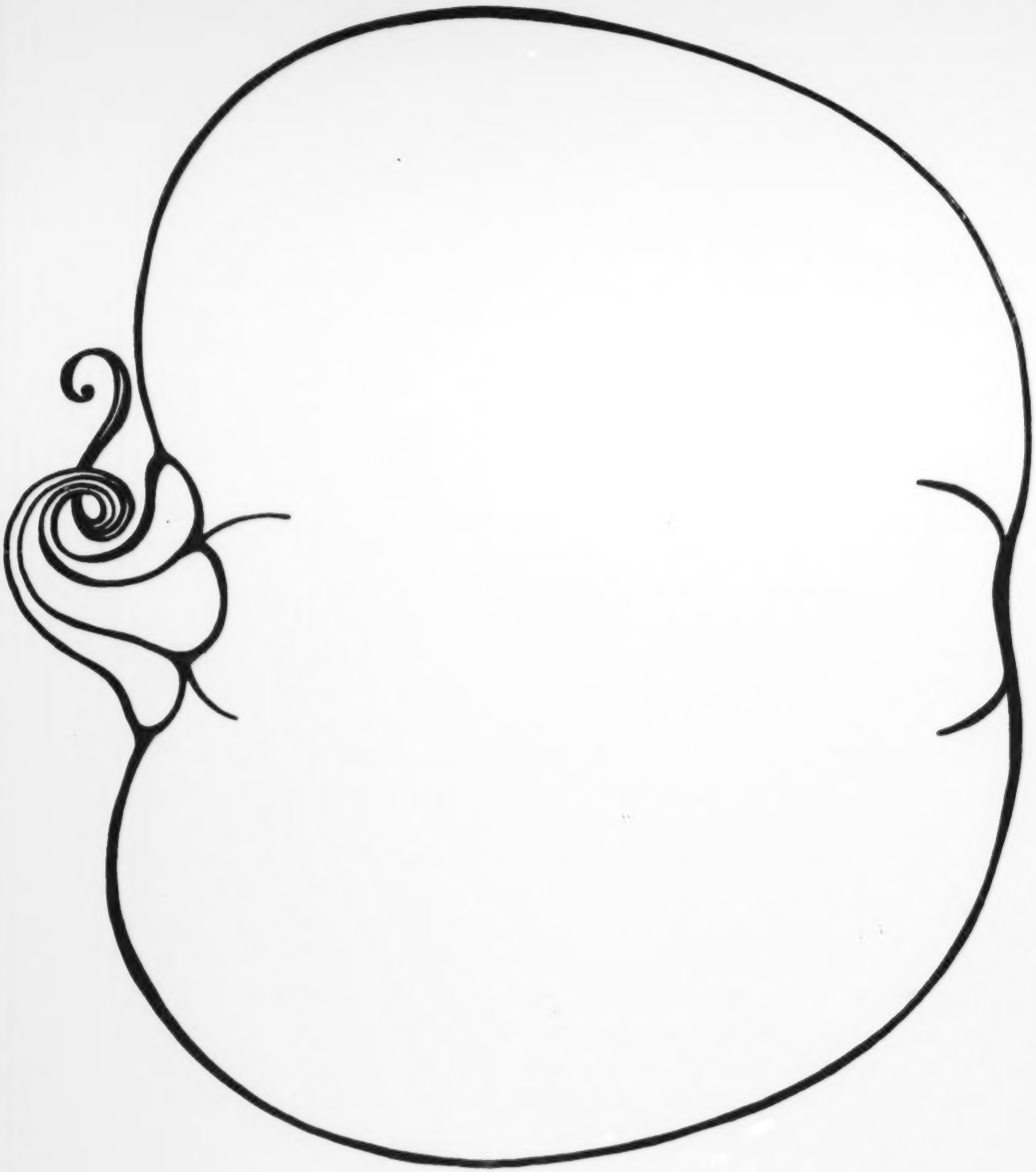
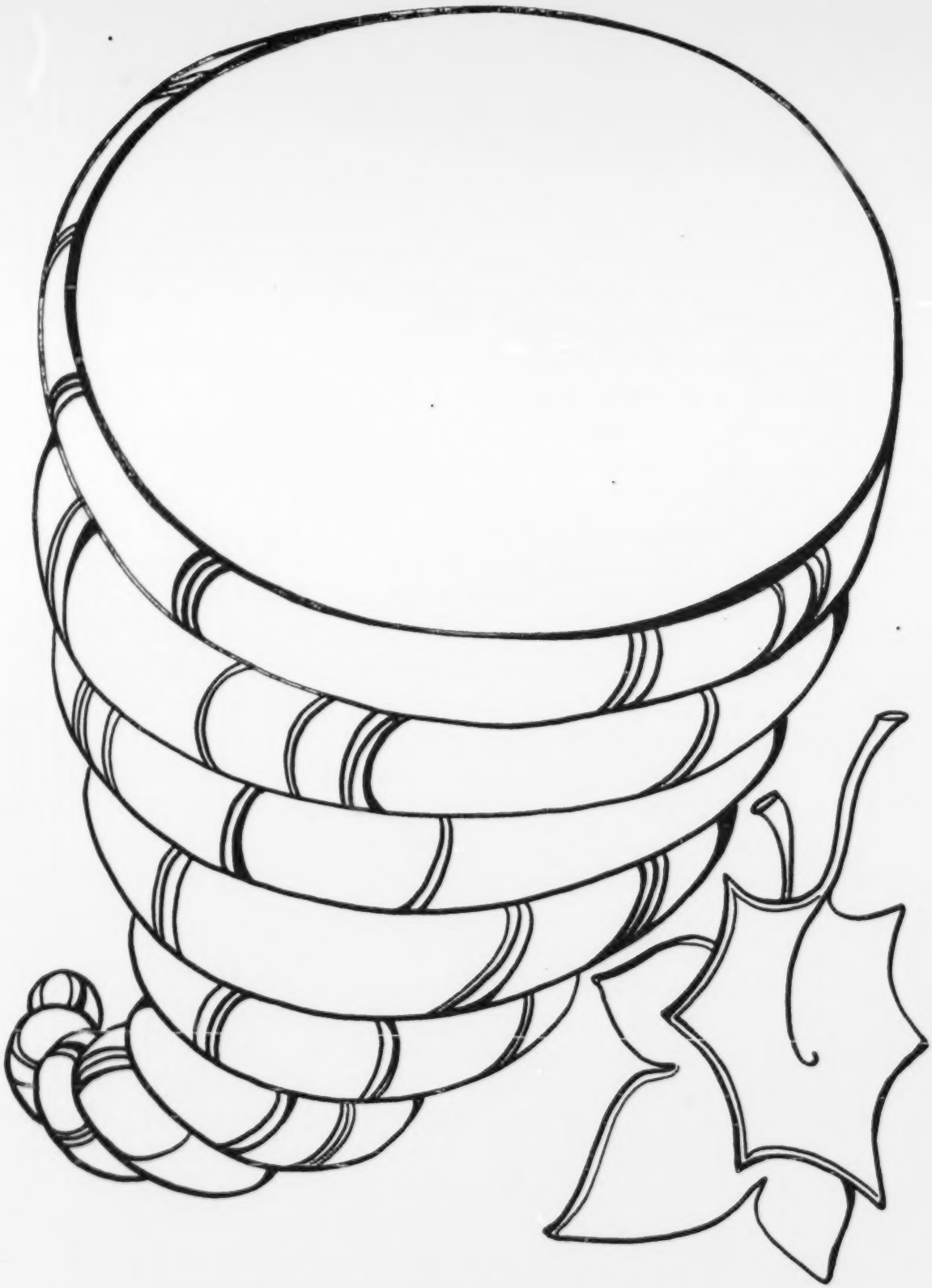
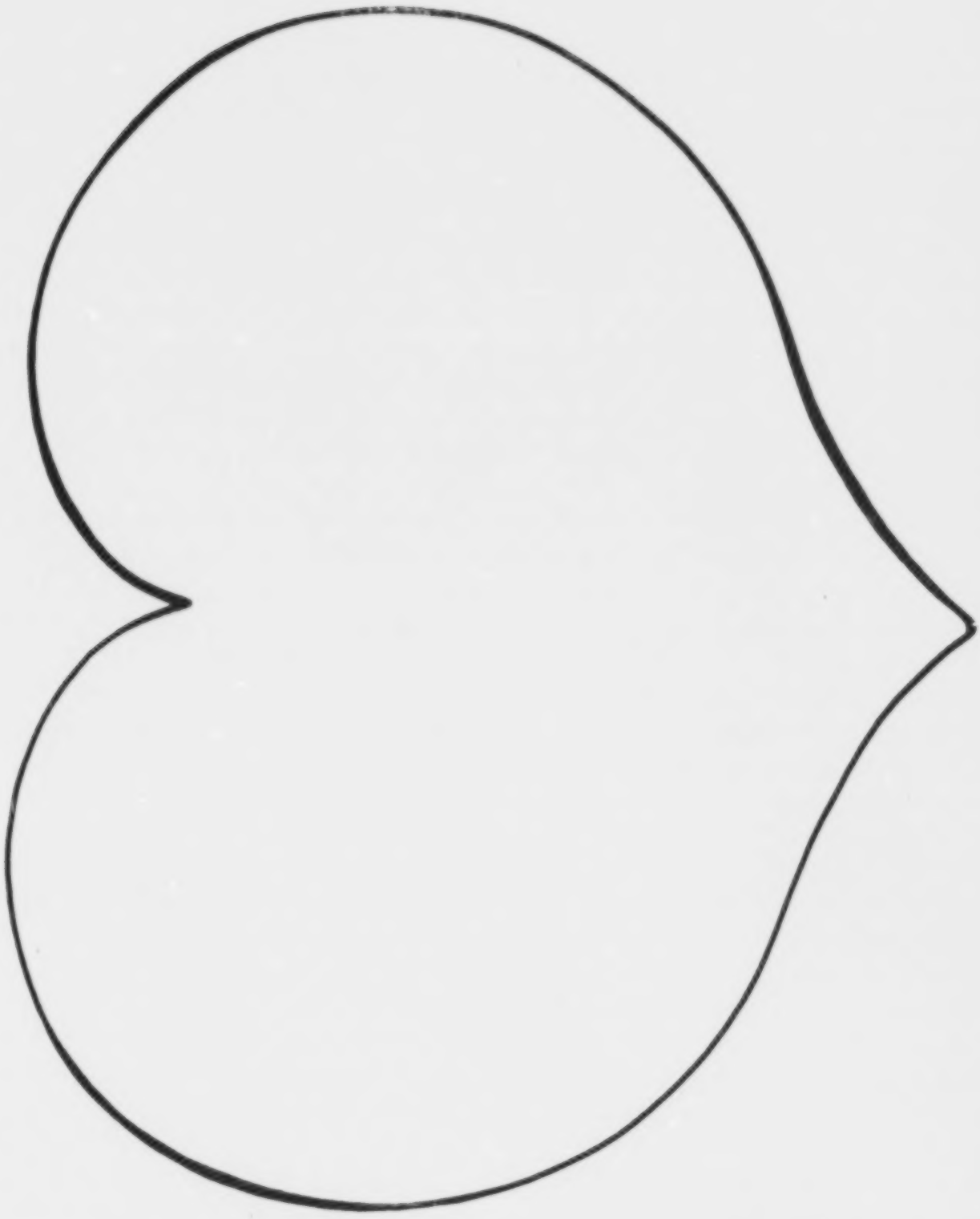
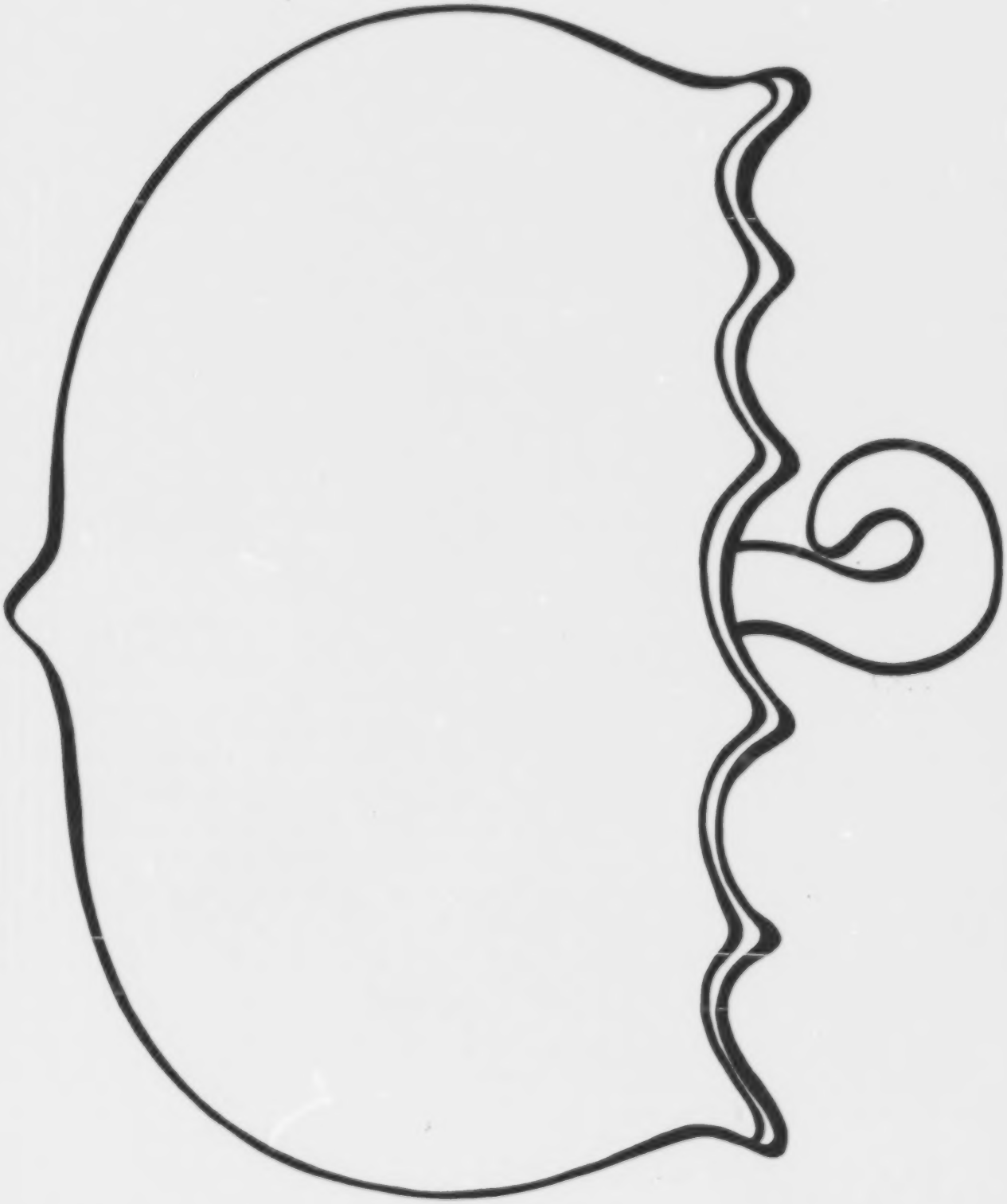
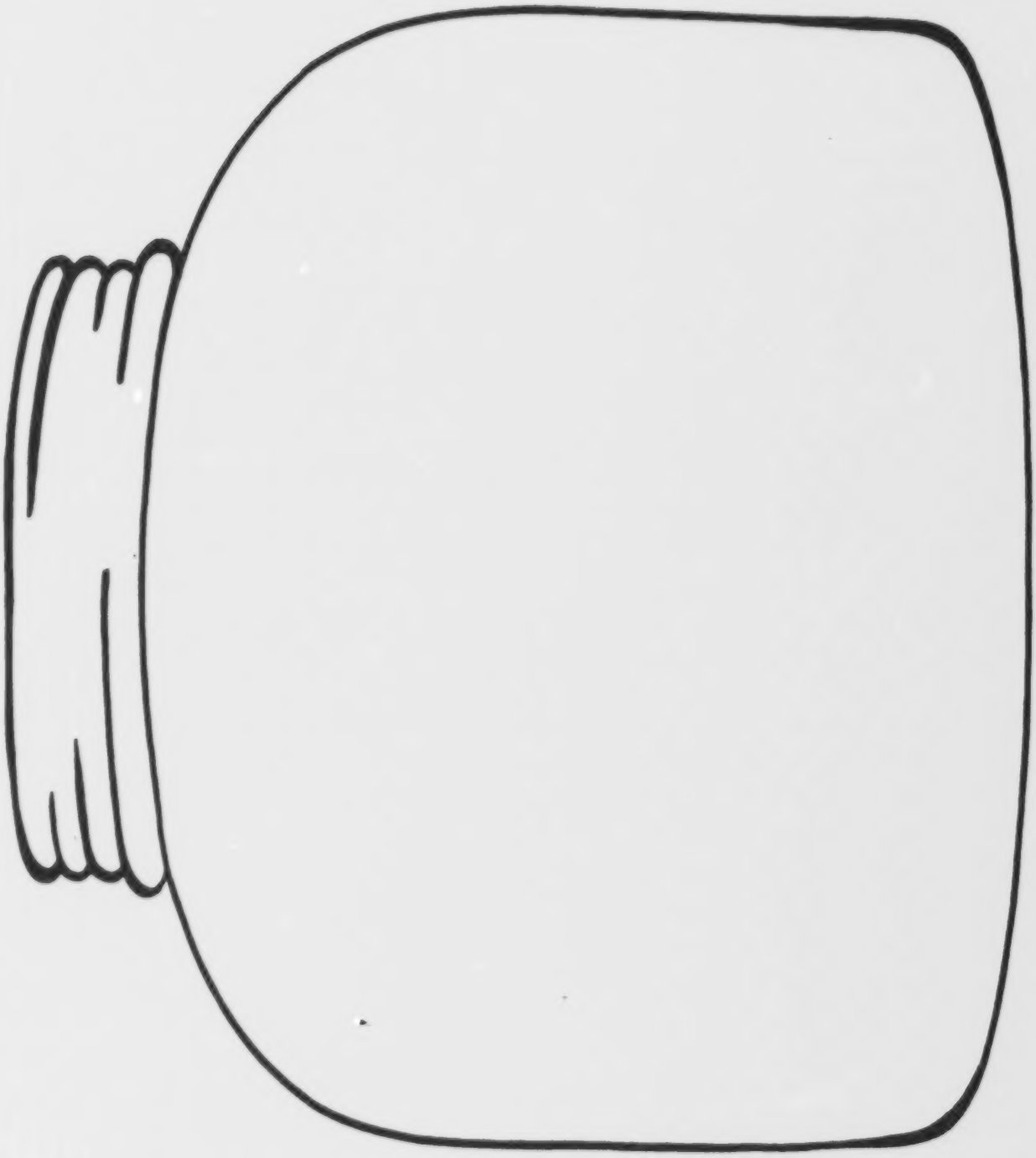
5. Use the mats for sorting. Photocopy the mats on sheets of different colored paper to make color-sorting mats. Make small, medium, and large copies for sorting by size. Create copies with numbers on them for sorting by amount. You're sure to find other possibilities as well.
6. Use the mats with real cash and coins to teach the concept of money or of addition and subtraction using money. For example, you might place all the pennies in one pot, the nickels in another, and the dimes in another. Have the students determine how many coins are in each pot. How much money is in each pot?
7. Have the students create patterns on the math mats. On the lily pad, for example, they might place colored plastic frogs in the following order: green, green, red, green, green, red, and so on.
8. As an art activity, have students color or finger-paint the mats, or cover them with small pieces of colorful tissue paper dipped in starch.
9. Use the mats as student writing frames or as places where teachers can write dictation.
10. Use the math mats as covers for class books or journals.

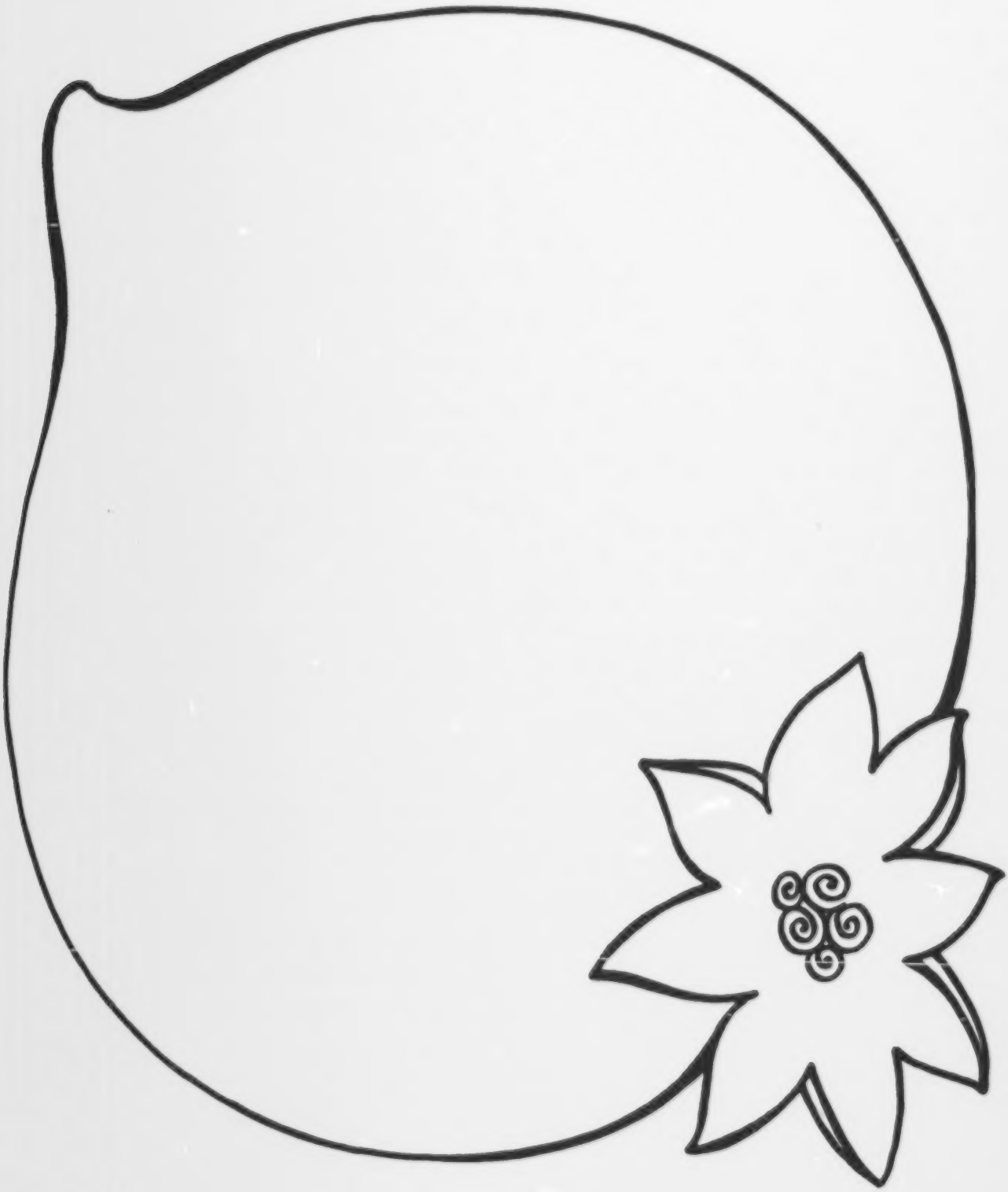


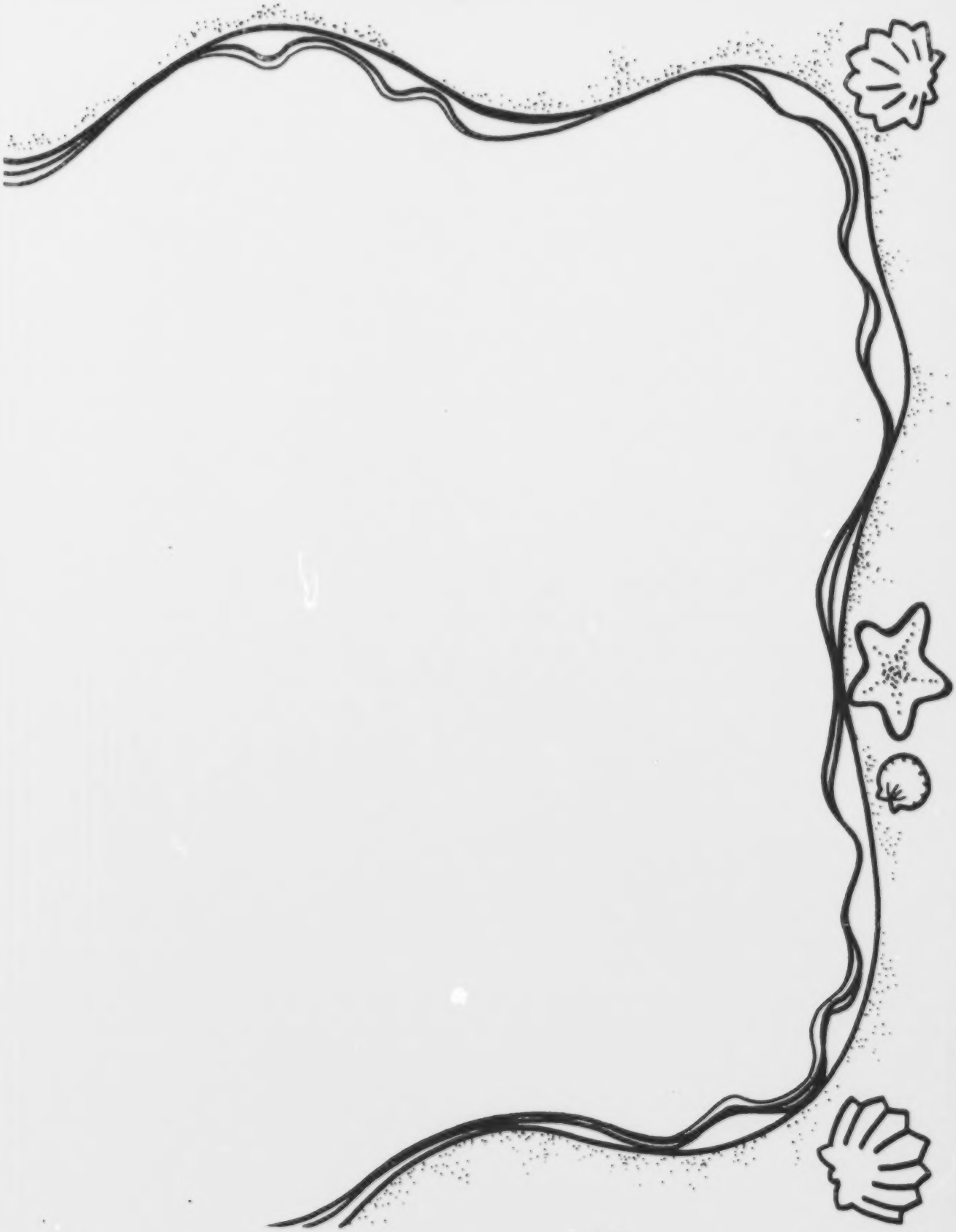


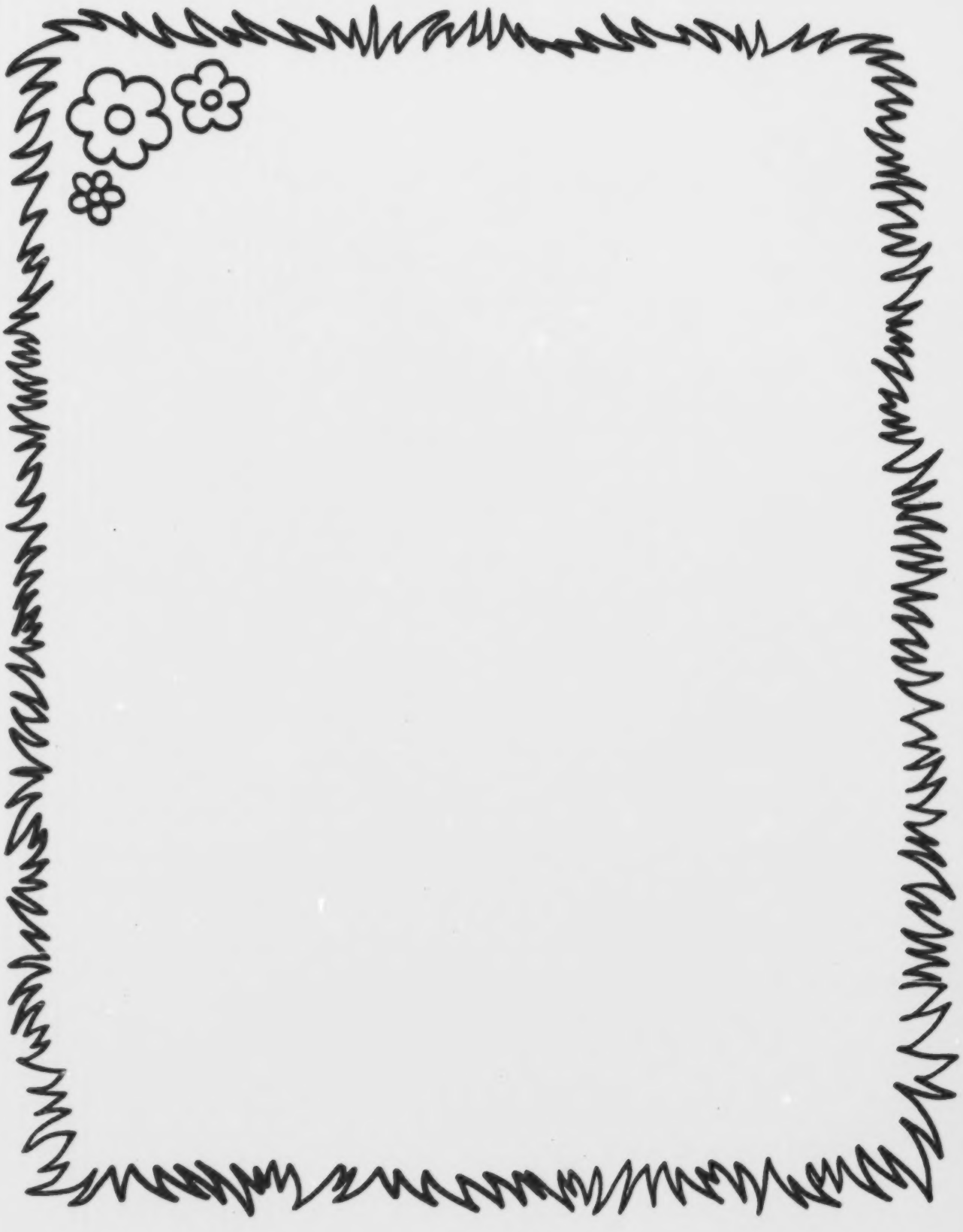










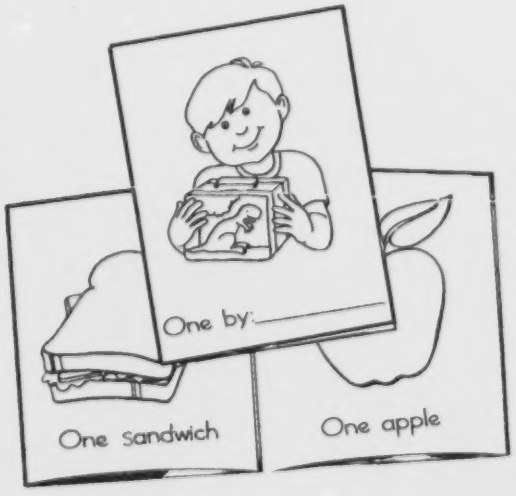


Section 4

1 2 3 Read with Me: Early Emergent-Level Books Focusing on Number Recognition

When used as supplements to classroom instruction and curriculum, all of the early emergent-level number books that follow are designed to integrate math and literacy. As young children work with these forms to create their own books, they will strengthen their letter/sound recognition, improve their concept of print, and reinforce their numeration and book handling skills. At the same time, students are sure to find joy and reading confidence as they create their own books.

"1 2 3 Read with Me" books are easy to make, use, and store. Simply photocopy each page and quarter-fold it, as if you were making a greeting card. Have each student color the book and read it to you, making sure that the child is touch-tapping the words as he/she reads. These books may be stored in Ziploc bags or in individual student tubs or cubbies to keep them accessible.



One apple

One drink

One

by: _____

One sandwich

One lunch

Two caps

Two pants

Two

by:_____

Two kids

Two shirts

63

Three kittens

Three pigs

Three

by:_____

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Three stories

Three bears

Four eat carrots.

Four eat celery.

Four

by: _____

Four want more.

65 Four eat lettuce.

Five

by: _____

Five buzz high.

Five are in a hive.

Five buzz low.

Five buzz home.

Six swans dive.

Six swans waddle.

Six

by:_____

Six swans swim.

Six swans fly.

Seven take a trip.

Seven see the stars.

Seven

by: _____

Seven are on a ship.

Seven go to Mars.

Eight down low

Eight in a box

Eight

by:_____

Eight up high

Eight ready to go

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Nine are in a line.

Nine are in a circle.

Nine

by: _____

Nine are in a square.

Nine are all mine.

Ten wiggly toes

Ten shiny braids

Ten

by: _____

Ten sticky fingers

Ten pretty bows

Eleven in the sand

Eleven in the treetops

Eleven

by: _____

Eleven on the land

Eleven in the water

72

Twelve

by: _____

73 Twelve sesame buns

Twelve slices of cheese

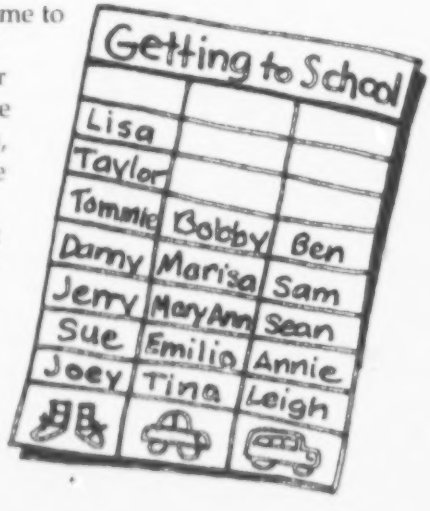
Twelve meat patties

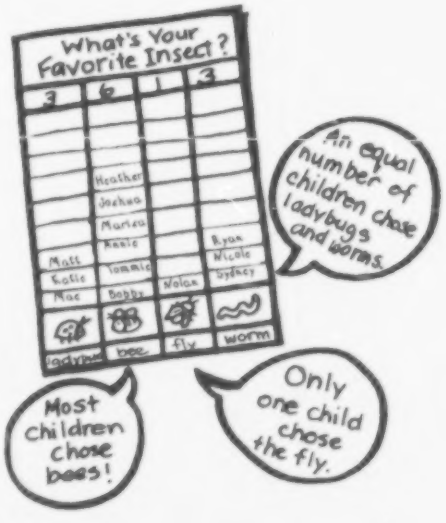
Twelve hamburgers, please

1 2 3 Graph with Me: Thematic Graph Activities

Young children enjoy graphing just about anything: the daily weather, who has lost a tooth, student birthdays, ages, eye color, favorite shape, favorite number from 1 to 10, favorite color, favorite food, favorite kind of apple, number of letters in each child's name, and so on. The group just needs to determine the subject matter to graph and the possible categories to include.

Suppose you decide to graph how the children come to school each day. You might create a graph with one column for those who ride the bus to school, one for those who walk to school, and one for those who are driven to school via car or van. Within each column, draw horizontal lines to create a grid. Starting at the bottom of each column, ask each child to print his name in the column that applies to him/her, so that the list of names becomes tallest in the column that applies to the most children. When everyone has added his/her name, discuss the results with the class. (Alternatively, mark X's in the grid in place of individual names.)





Whenever a class creates a graph and you look at it together, be sure to ask questions that promote critical thinking. Which column has the most? Which has the least? Are any columns equal? How many are in column _____? Are there more _____ or more _____? Are there fewer _____ than there are _____?

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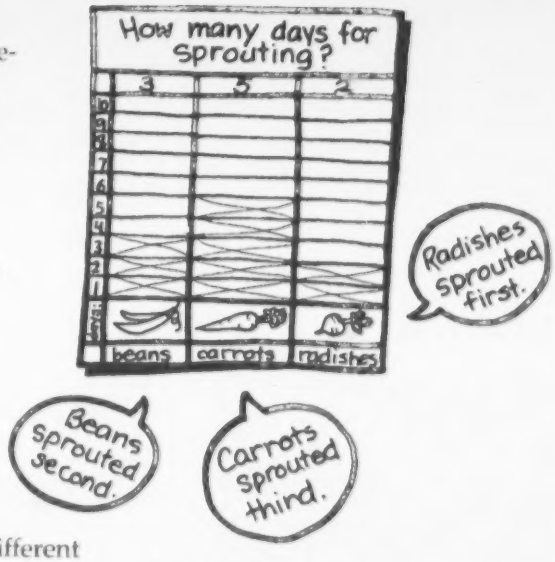
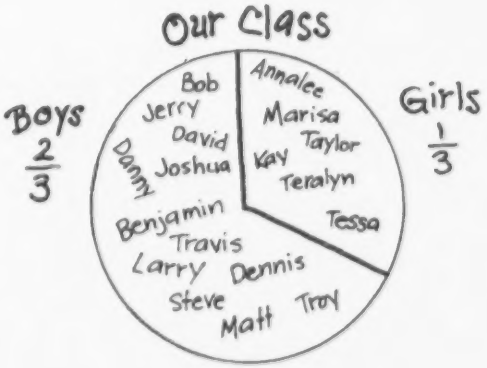
Children particularly enjoy graphs that evolve spontaneously. Perhaps you've recently planted seeds in your science-center garden and a child notices that some have now sprouted. This is a perfect opportunity to create a spontaneous graph: How many of our plants have sprouted and how many have not? If the plantings are different, such as beans, carrots, and radishes, you may want to make a graph depicting which plant the students think will sprout first. Watch and graph the progress: How many days did it take for each plant to sprout? Which plant sprouted first? Which plant sprouted last? How many days elapsed between the first plant that sprouted and the last?



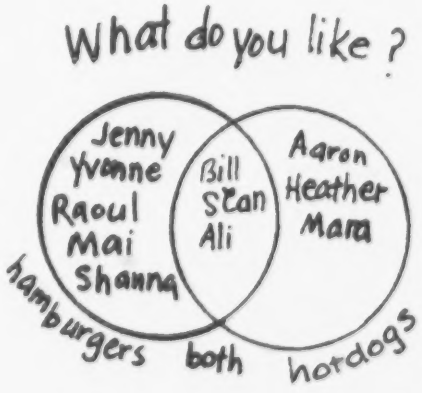
Be sure to organize the data differently with each graph; the more often students see ideas represented in different ways, the greater the impact will be on learning. Here are a few examples of completed graphs presented in different ways:

- A circle graph—also known as a "pie graph"—is a simple variation on a bar graph. In this case, each choice is marked as a fraction of the whole. If the class includes twice as many boys as girls, for example, a pie graph would show one-third of the pie as a "slice" in which the girls' names would be written. The larger slice (two-thirds of the pie) is where the boys would write their names.



- One variation on the circle graph is to use the outline of the circle itself as the dividing point. You might say, for example, "Write your name inside the circle if you are buying lunch and outside the circle if you are not."

- Students can use a Venn diagram to record information in categories that overlap. To make a Venn diagram, start with a pair of overlapping circles (a template follows at the end of this section). Label each of the two circles, as well as the overlapping portion, and then have the children write their names in the appropriate parts of the diagram. In this example, five students prefer hamburgers, three like hot dogs, and three like both. The blank graphs at the end of this section will give you several options for getting your class started on some wonderful graphs that are all their own.



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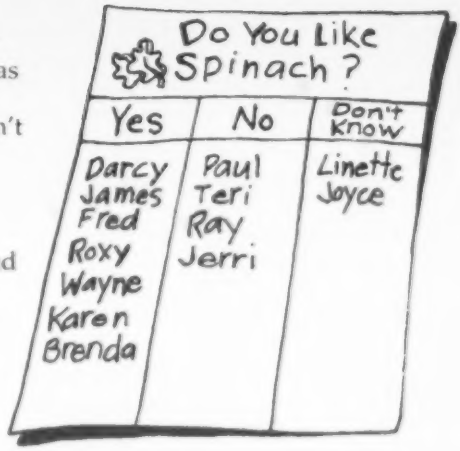
- A two-column graph is a common choice for recording information that can be described as "yes/no" or "either/or." By adding a third column, you can include a "maybe" or "I don't know" choice.



Variations on the graphing theme are limitless, and each graphing experience is a valuable activity for students. There's a wealth of opportunities for learning in the process of responding to questions, thinking of appropriate responses, recording the information in a variety of ways, and discussing the results.

Just Graph It!

Children love to graph just about anything, but here are some comparisons that are especially fun.

- Eye color: blue, green, brown, gray, hazel
- Hair color: blond, brown, red, black
- Hair style: curly or straight, long or short
- Boys/Girls: How many boys are in the class, and how many girls?
- Age: How many students are 4 years old, 5 years old, 6 years old?
- How do you come to school: walking, biking, by car, by bus?
- Shoes: How many have shoes with laces, how many with buckles, how many with Velcro?
- Number of buttons on our clothes
- How many days until _____ (a holiday or special event)? A popular example of this is making a Christmas chain out of red and green paper links. As each day passes and you move one day closer to Christmas, remove a paper link. When you reach the end of the chain, it will be Christmas Day.
- Favorite _____ (color, pet, food, dinosaur, book, game, school subject)
- How many letters are in your name?

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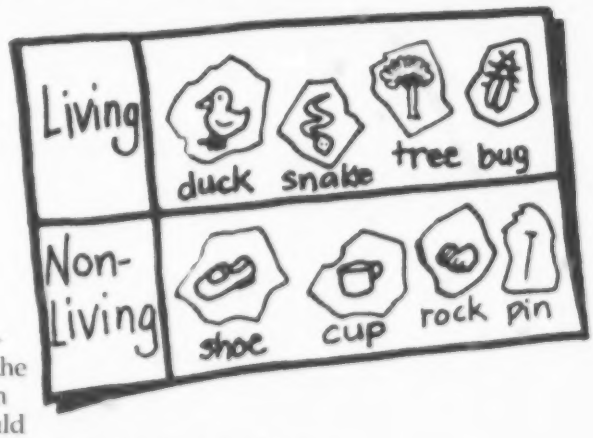
- Have you ever _____ (seen a rainbow, flown a kite, swum in the ocean, and so on)?
- How many people are in your immediate family?
- Can you _____ (ride a bike, tie your shoes, do a cartwheel, and so on)?
- Living or nonliving: Try cutting pictures out of magazines and discussing the pictures: "Is this a picture of a living or a nonliving thing?" Paste each picture in the appropriate column.



- Alive, endangered, or extinct: Show the students several pictures of animals—making sure the pictures include some animals that are alive, some that are endangered, and some that are extinct. Then ask the students to place each picture in the column that best matches the animal. Examples could include dog, cat, platypus, condor, brontosaurus, stegosaurus, and so on.
- Foods by food group (grains, fruits, vegetables, protein, dairy, extra): Make a graph with one column for each food group. Have the students draw, cut pictures from magazines, or print the names of different foods. Discuss each food and what food group it belongs to, then paste it in the appropriate column.
- Weather: You can create a daily, weekly, monthly, or yearly weather graph. Each day, simply color in a section of the grid in the column that best depicts that day's weather. Column titles could include clouds, wind, sun, rain, snow, fog, hail, sleet, and so on.
- Events or items by season: Create a graph with four areas, one for each season. Then list or show pictures of different activities, such as going to the beach, skiing, flying a kite, and picking apples. Place the picture or word for each activity in the section for the most appropriate season.

The following pages contain templates your class can use to create all sorts of graphs of their own.

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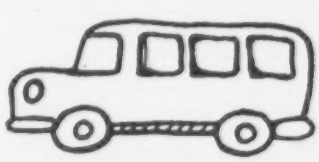
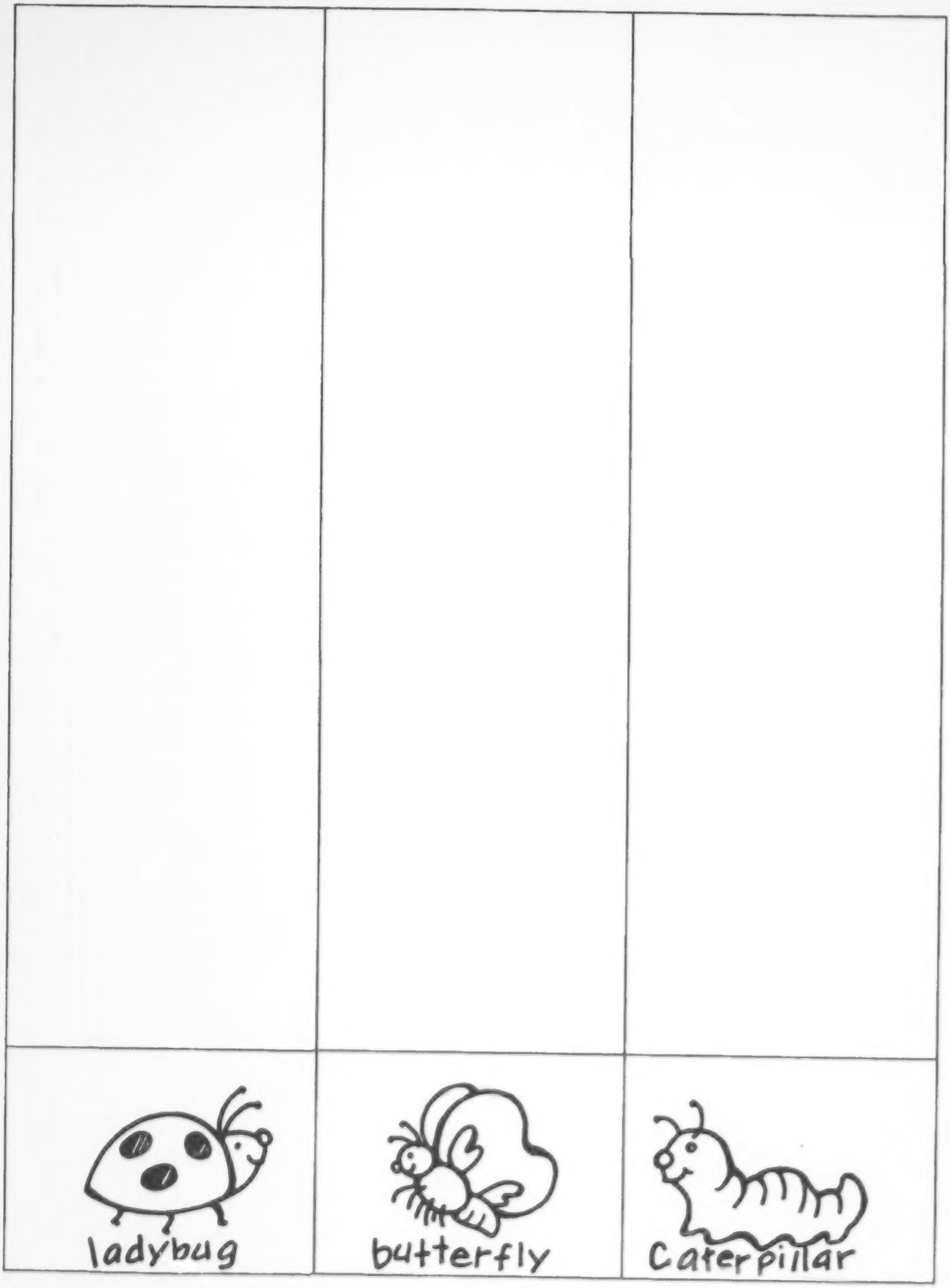
walk	car	 bus

Favorite Insect Graph

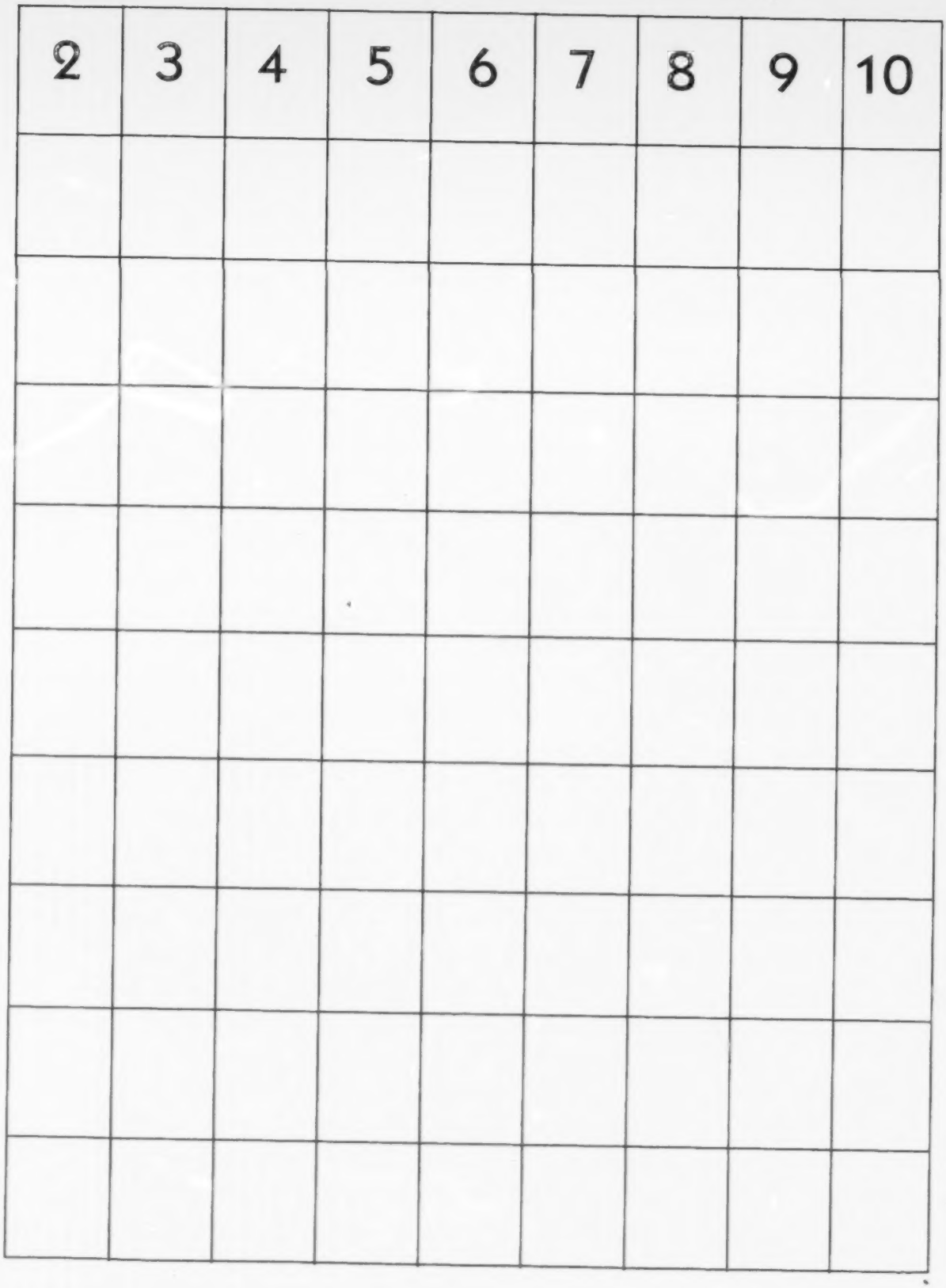


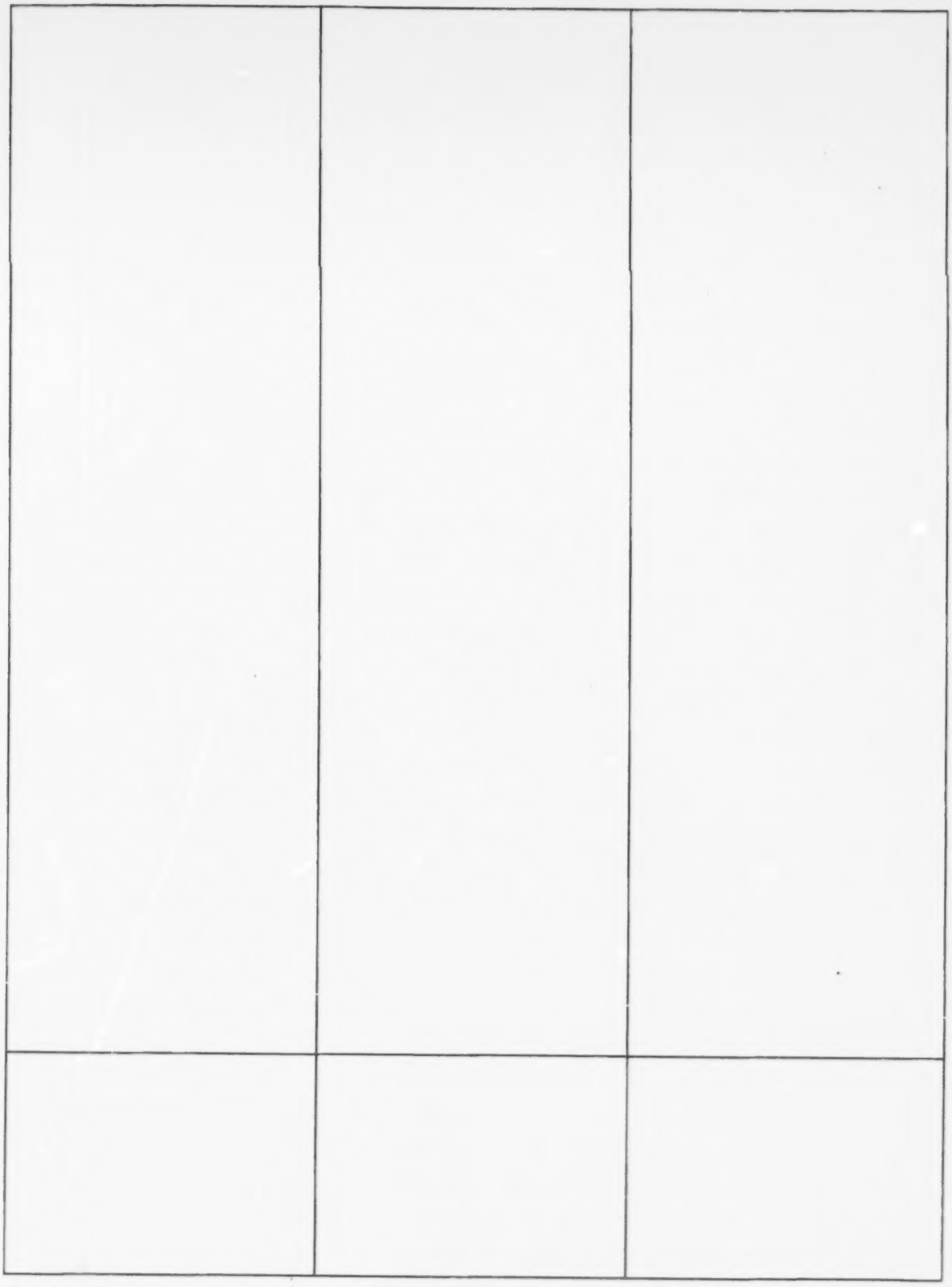
yellow

red

green

Number of Letters in Your Name Graph





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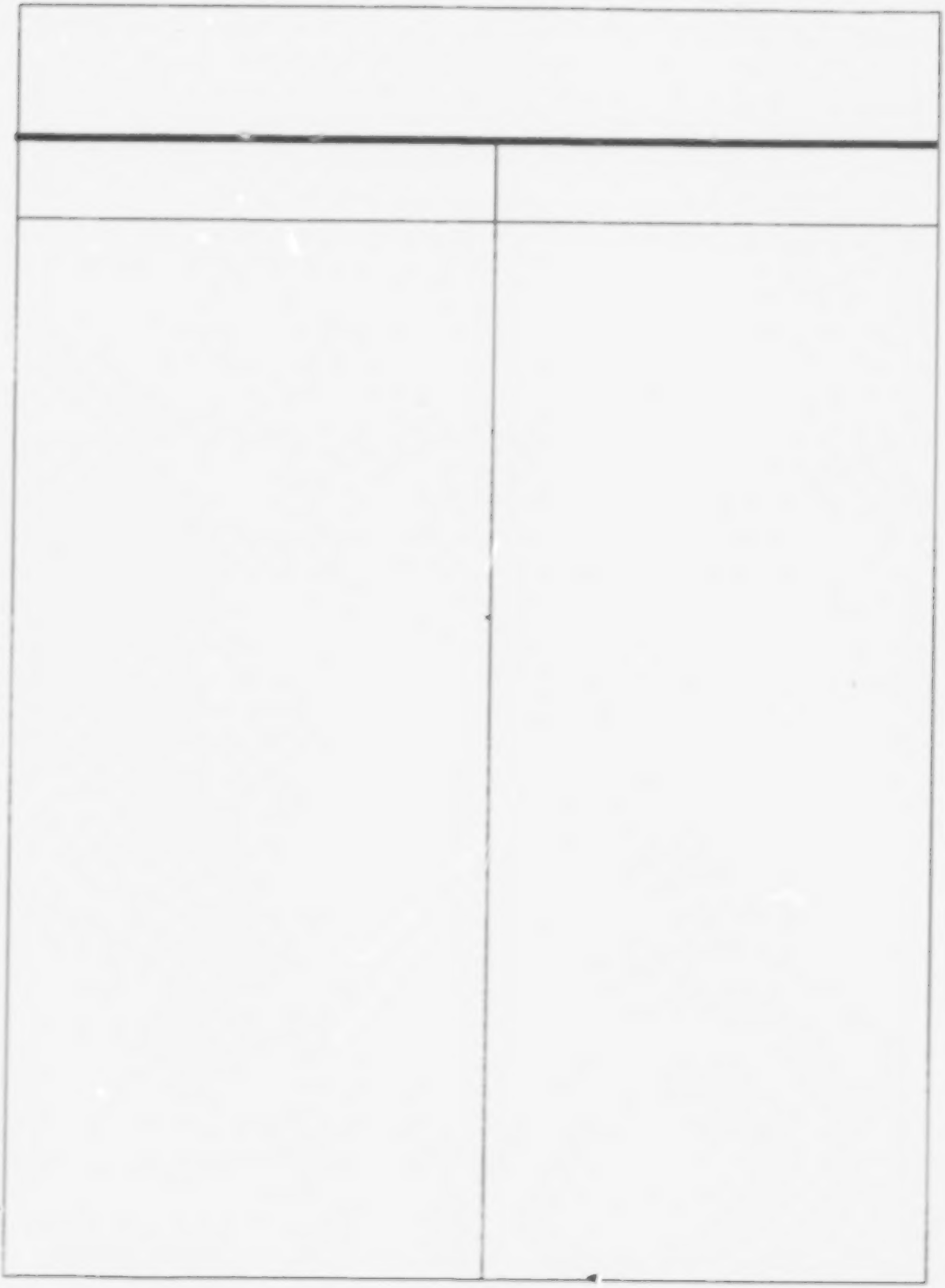
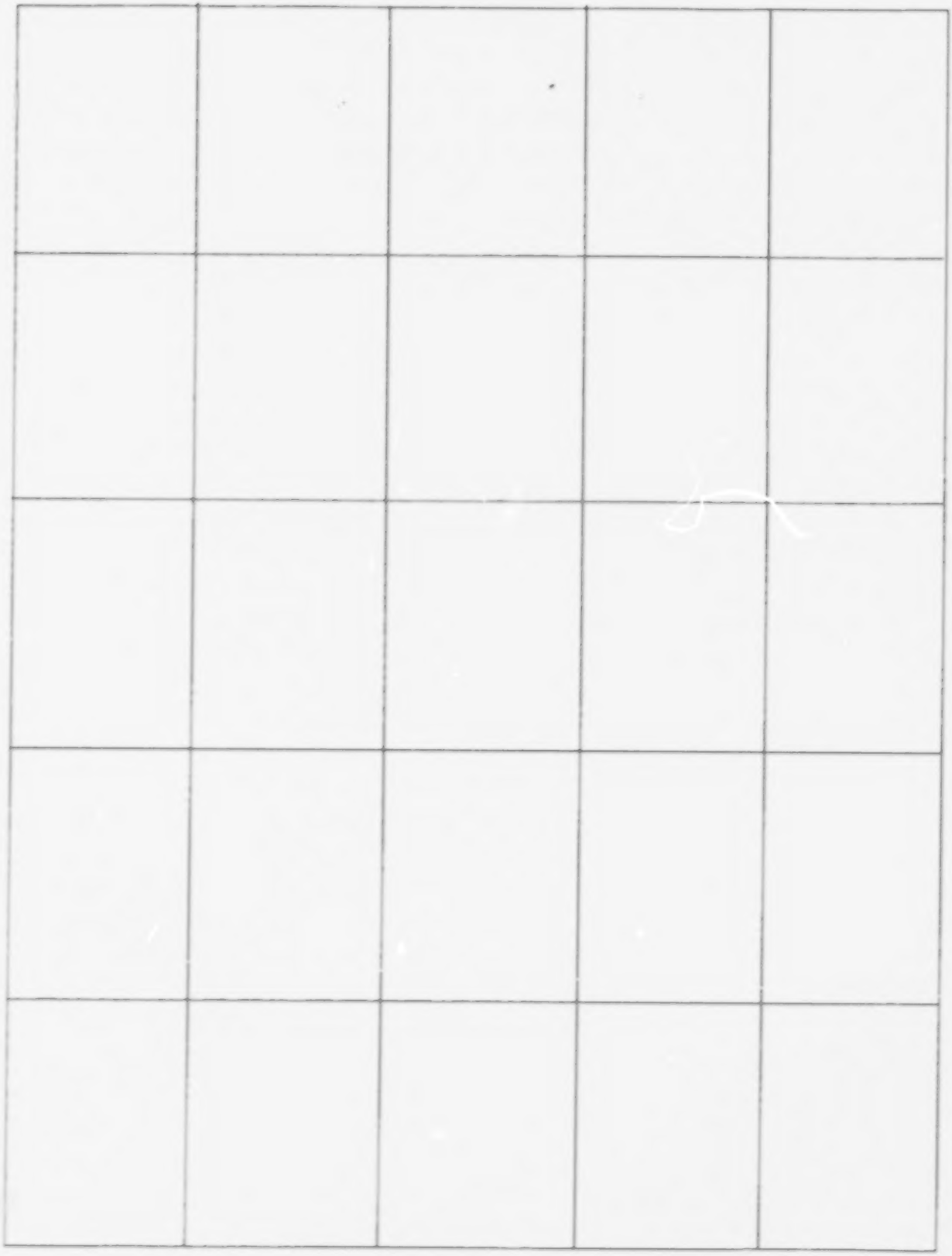
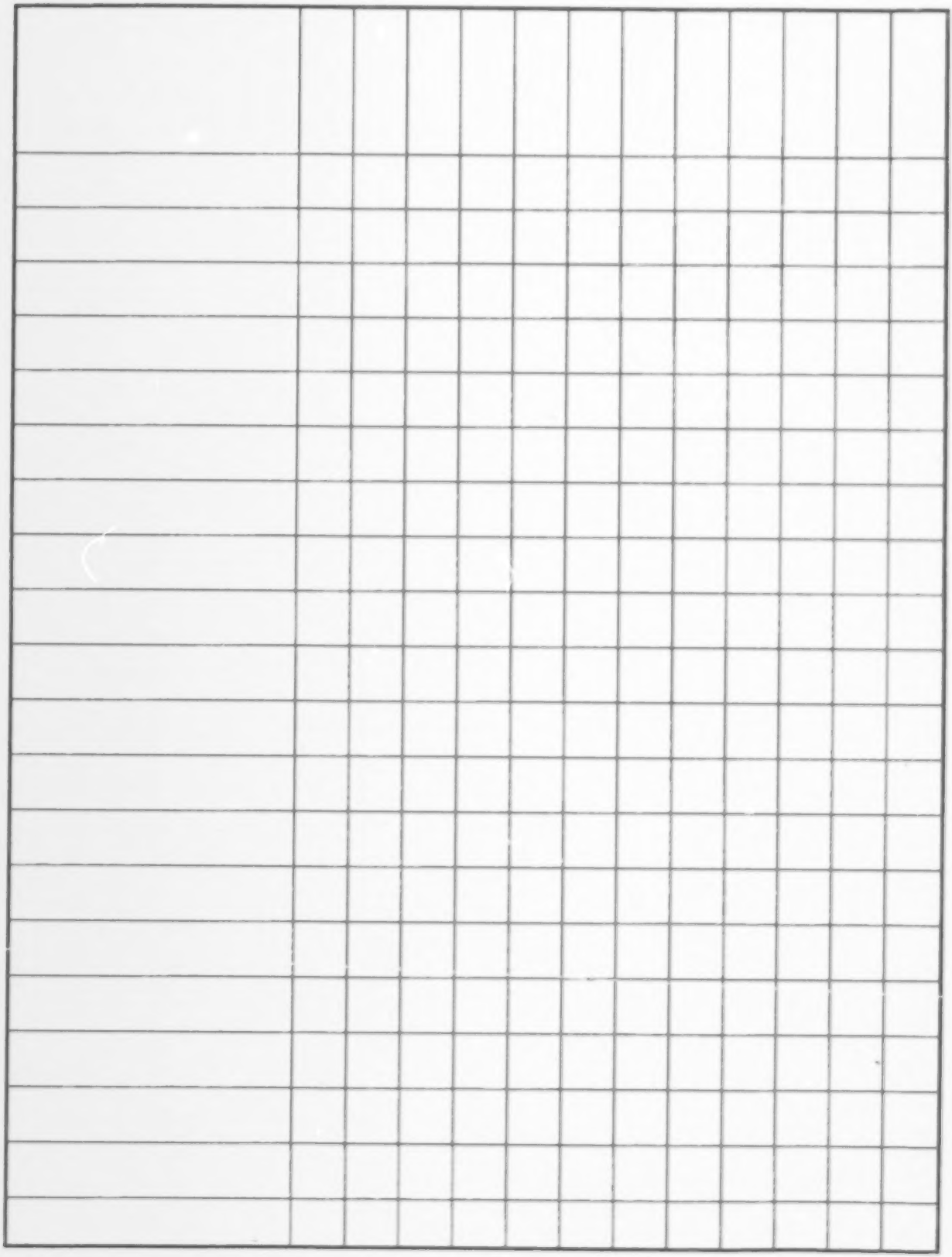
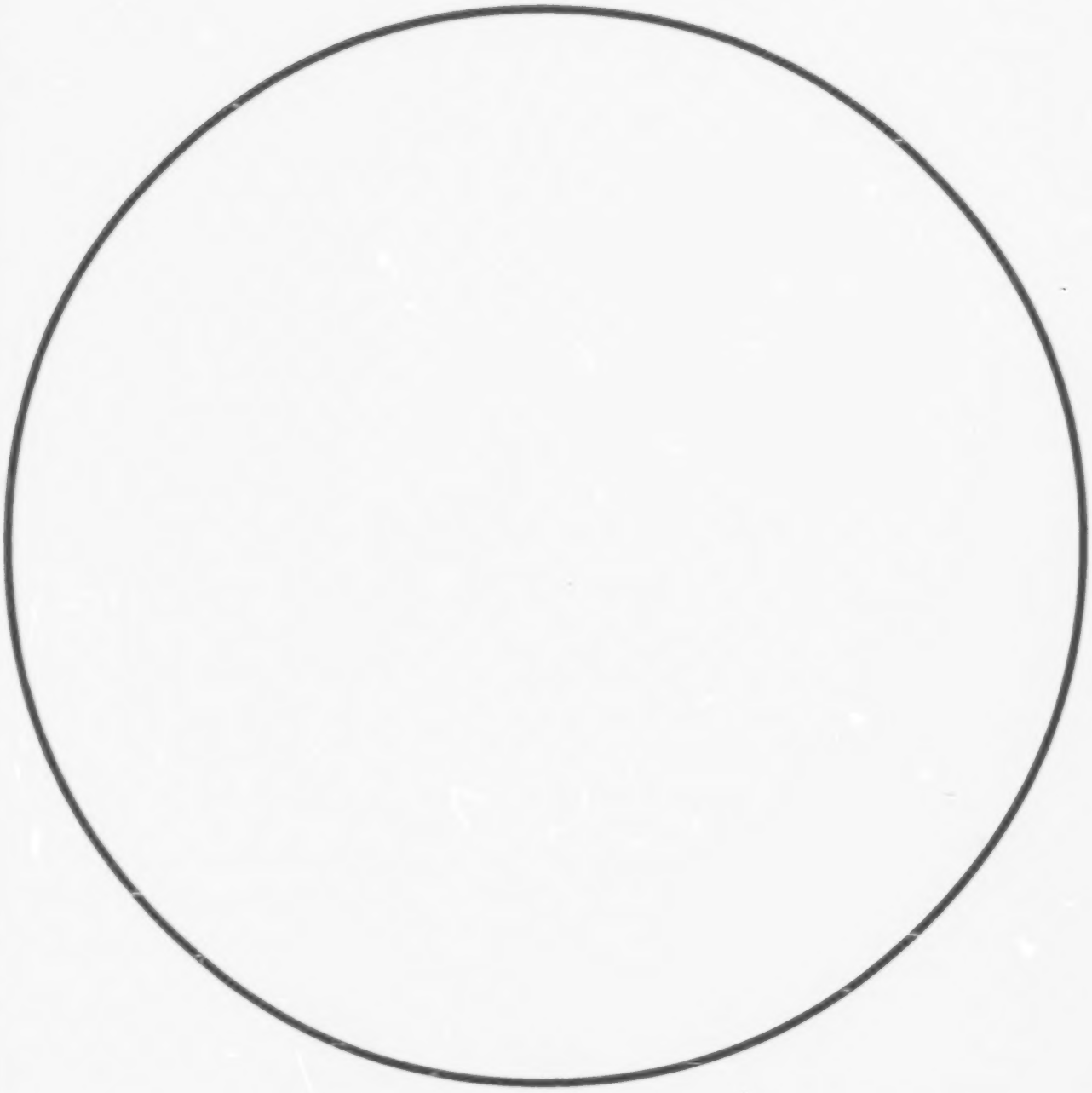






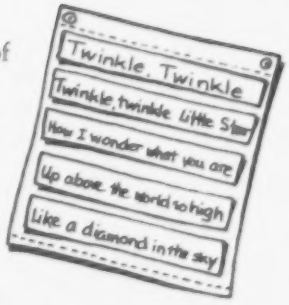
Venn Diagram

Circle Graph



Section 6

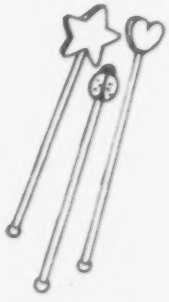
1 2 3 Rhyme with Me: Concept-Based Poems



This section contains activities designed to integrate the use of poetry in the classroom, a selection of mathematically themed poems, and a template for a class-made book that incorporates each poem. Poems—particularly ones that appeal to children by incorporating rich language, rhyme, and meter—are a wonderful means of reinforcing basic math concepts. You may choose to rewrite these poems on sentence strips and use them in a poetry center with a pocket chart, or simply duplicate them and place them in a book format for each child. Whichever approach you take, your students will love using poetry to reinforce their math skills.

Pocket Chart Poetry: Fast and Fun Activities

Poetry is easy to integrate into your daily classroom routine, it's fun for the students, and it's a consistently worthwhile addition to the curriculum. Here are just a few of the many effective ways you can use the following poems, and many others, to encourage students to remember what they've learned.



Tracking. Thematic pointers are magical to children and make tracking print a special, highly anticipated privilege. Using a special pointer, invite different children to come up and track the print as the class recites the poem or rhyme.

Word count. Give each child a Ziploc bag filled with edible manipulatives such as Goldfish crackers. Write each child's name in permanent marker on his/her own bag or on an adhesive label so he/she can reuse it throughout the year. Have each child take out one Goldfish for each word that is read. Remember to say the words slowly. When you have finished, have the children count the Goldfish to determine how many words were in the poem. The best part is eating the Goldfish counters when you have finished! (A variation on this activity is to invite a child to come up to the pocket chart and choose a special pointer to count the words. Have the other children clap and count along.)

Choral read. Divide students into groups (by boy/girl, left-handed/right-handed, row, or table). Have the groups take turns choral-reading the poem—first reading it

aloud together and then reading it again by whispering, singing like an opera star, or using loud monster voices. Perhaps they would like to fake a British accent, or to use speedy "rabbit talk" or slow "turtle talk."

Recognition. Have the children use Wikki Stix, dry-erase markers, or a pointer to identify:

- a particular number
- a number that's bigger than one you name
- a number that's smaller than one you name
- a particular math word

Concept integration. Choose poetry that emphasizes cross-curricular concepts such as number words, color words, or science vocabulary.

Number match. Copy key numbers or shapes or paste appropriate pictures onto sentence strip cards. Have the children match each number or picture card to the appropriate words in the poem.

Rhyme. Have the children point out the rhyming words in the poem. Put these words on a white board. Ask the children to share other words that have the same rhyme. Write the words below the initial rhyming words and discuss the rhyme pattern.

Example: Jack and Jill went up the hill.

Rhyming words: Jill hill Bill will still gill drill spill mill chill thrill

Questions to consider:

- In what way are these words similar?
- How are they different?
- Can you find a word that begins with a digraph?
- Do these words use a short or long vowel sound?
- Can you find the common word family?
- Do all the words have the same number of letters?
- Count and see. Sort and graph them.
- Do these words use a short or long vowel sound?
- How many rhyming words did we make?

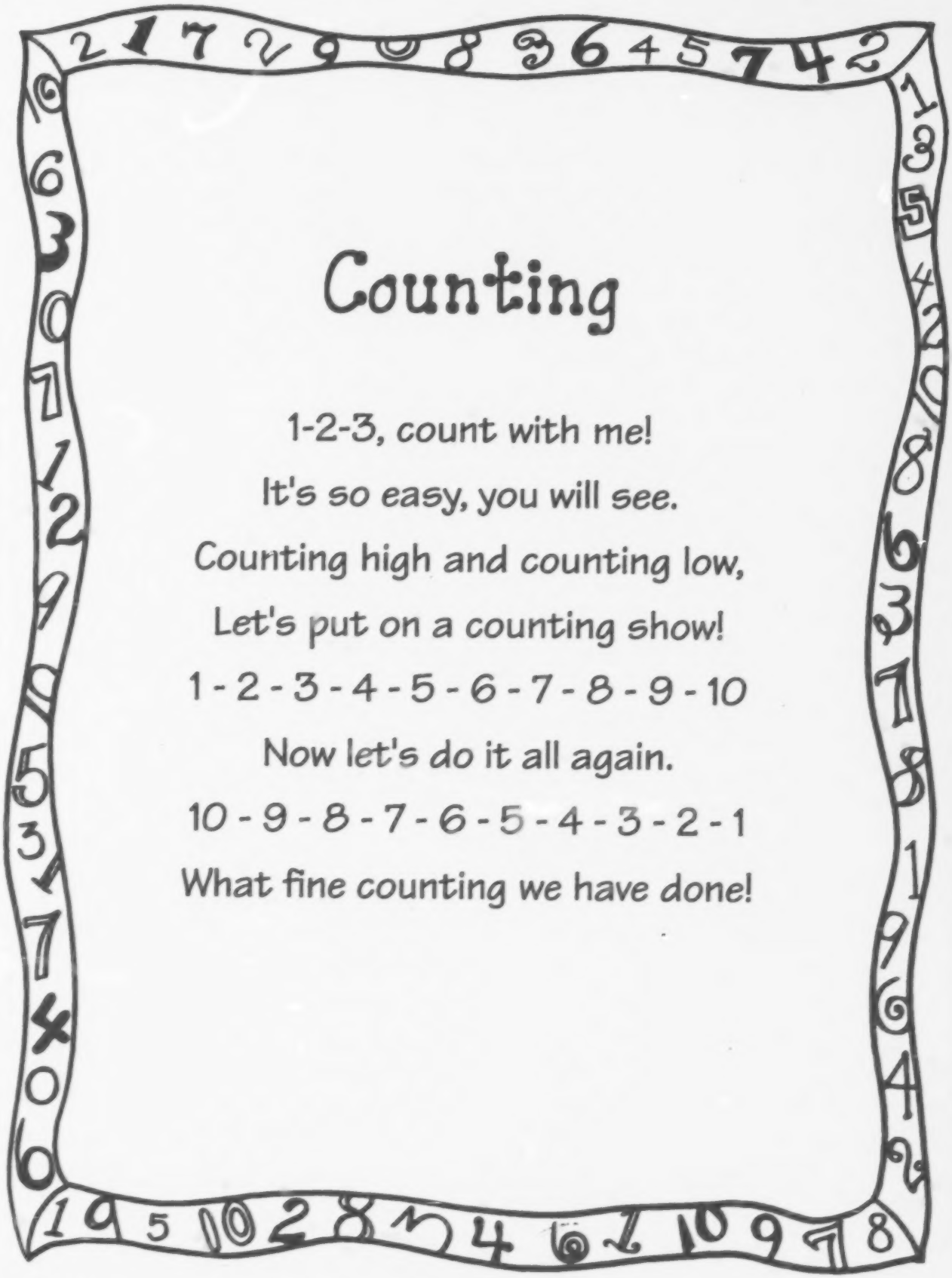
Put these words on flash cards. Blend and segment the words verbally.

Word order. Take the words or sentences off the pocket chart and mix them up. See if the students can put them back in the correct order.

Kinesthetic learning. Create body movements to go along with a poem or rhyme. Teach these movements and invite the children to "act out" the rhyme or poem. Consider buying or making props to go along with the dramatization.

Poetry Cards

The following pages provide poetry cards for several different mathematical concepts. After reading and discussing the poems, consider having each student create his/her own book from copies of these pages.



Counting

1-2-3, count with me!
It's so easy, you will see.
Counting high and counting low,
Let's put on a counting show!
1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
Now let's do it all again.
10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1
What fine counting we have done!

Incredible Edibles

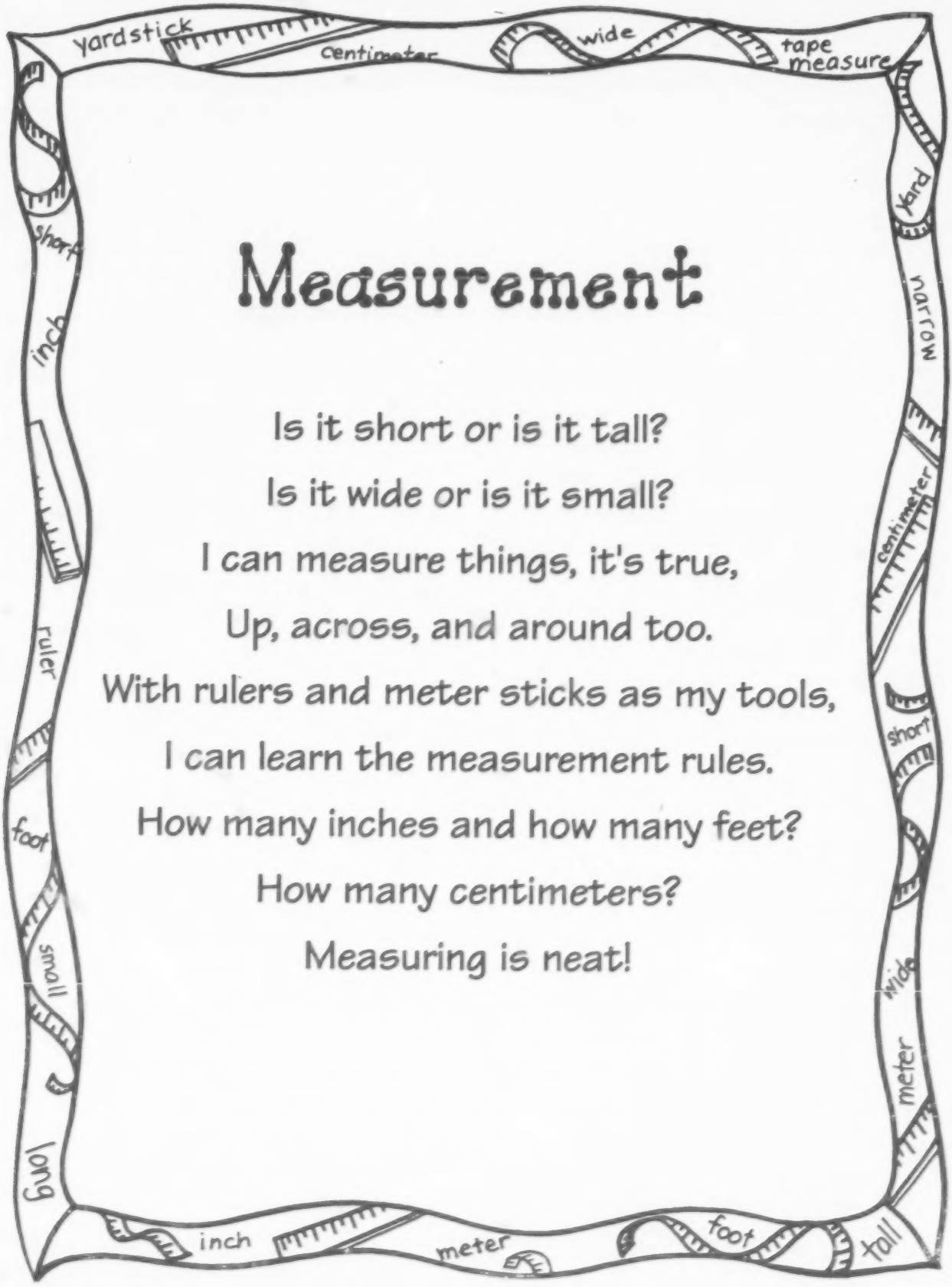
Repetitious is delicious:
M&M, gumdrop, M&M, gumdrop.
Patterns can be quite nutritious:
Carrot, celery, carrot, celery.
And they can be oh so yummy:
Peanut butter, jelly, peanut butter, jelly.
When they end up in your tummy:
M-m-good, m-m-good.

Shapes

Shapes are hidden all around.
Look and see what can be found.
A sphere can be the moon.
A triangle can be a broom.

Square is a box.
Oval are some rocks.
My ruler is a rectangle.
A circle is my bangle.

Ice cream is what a cone will hold,
And ice is a cube that is very cold.
Shapes are even seen in books.
Shapes are everywhere I look!



Measurement

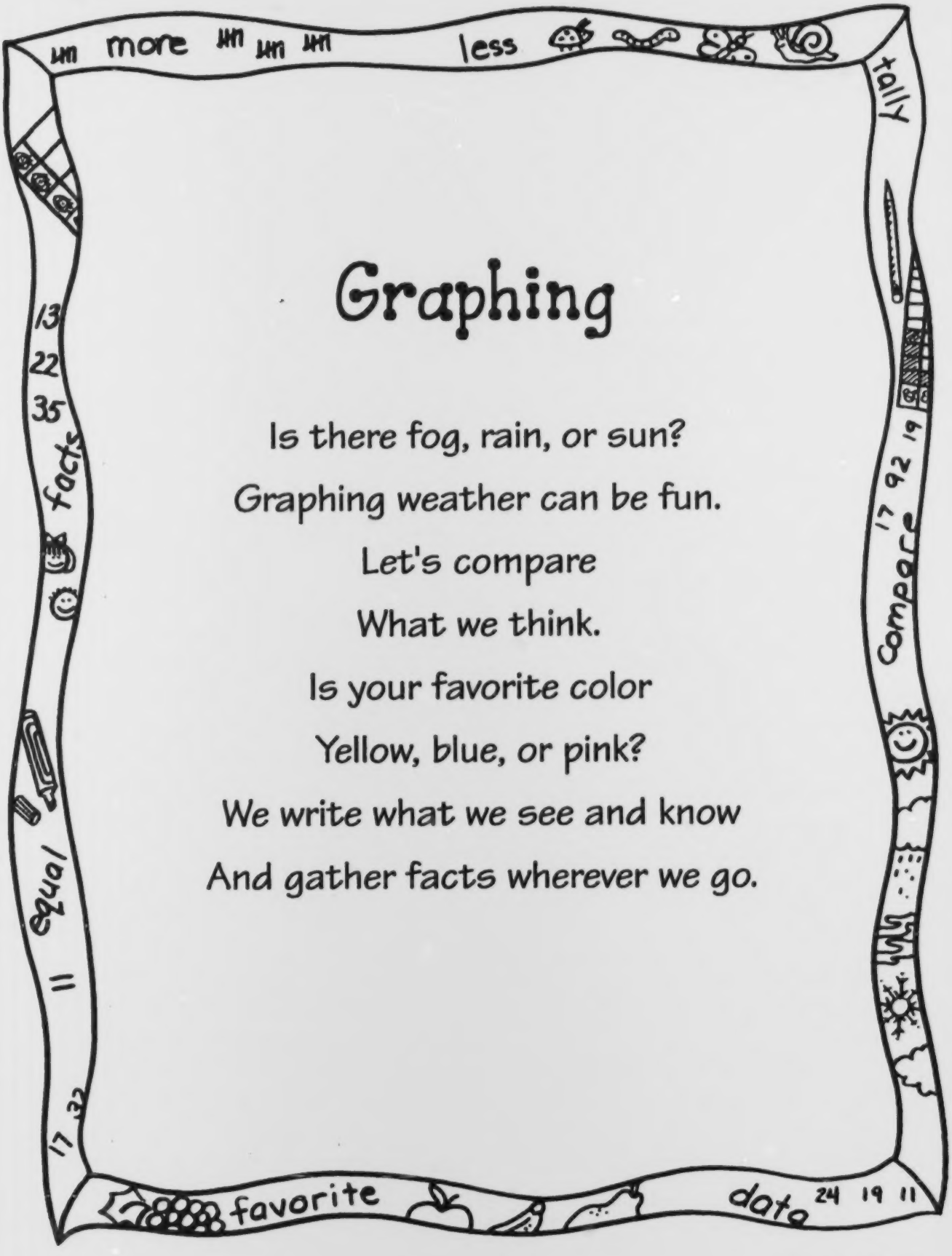
Is it short or is it tall?
Is it wide or is it small?
I can measure things, it's true,
Up, across, and around too.
With rulers and meter sticks as my tools,
I can learn the measurement rules.
How many inches and how many feet?
How many centimeters?
Measuring is neat!

Addition

One plus two plus three plus four,
Adding numbers makes more and more.
Five plus five is ten and then
You'll get twenty if you add ten again.
Addition is great.
It gets the job done.
Everyone uses it.
Adding is fun!

Subtraction

How many are left if you take away one?
That is how subtraction is done.
Ten take away eight equals two.
Count on your fingers — it's easy to do!
Five take away two leaves just three.
Subtract three more and zero you'll see.



Graphing

Is there fog, rain, or sun?
Graphing weather can be fun.
Let's compare
What we think.
Is your favorite color
Yellow, blue, or pink?
We write what we see and know
And gather facts wherever we go.

Class Books

The following pages contain the beginnings of what can become wonderful books created by an entire class. For each book, you'll find one page of cover art followed by a page to be completed by each student. We suggest that you copy the cover pattern onto colored construction paper. Fill in the blank line on the cover ("Mrs. Jones's First Grade Class"), then laminate the cover, along with a matching sheet of blank construction paper for the back cover. On white multipurpose paper, make enough copies of the inside page so that each child has his/her own page to complete.

Before giving a book page to the children, brainstorm with the group about some of the possible ways to complete that page. The idea is to include the child's name, his/her drawing, and a description of that drawing to fill in the blanks at the bottom of the page (e.g., "The sun is a circle.") Be sure to encourage a wide variety of ideas, and write them on chart paper or the chalkboard so that students can refer to them. Then model for the children how to complete a page. (Be sure to include the modeled page in the finished book. The teacher's page is always very popular with students!)

Note that the final book in this section is slightly different from the others. This one has a cover and a page for each child to fill out and illustrate, just like the other books. However, this book has a bonus: two pages of templates for graphs. After the students have completed their pages, you can use these templates to graph the information from the individual student pages. Share the finished graphs with the class and then add them at the back of the class book. This is a fun way to synthesize the information from the individual student pages, and children always enjoy seeing the graphs.

When all of the pages for each book have been completed, place them between the construction-paper covers and bind the completed book. Use a comb or spiral binding, or simply staple or hole-punch, then hold everything together with yarn or O-rings. (Laminating the books is optional, but it does make them last longer, and that can be a real plus if they're to be taken home and brought back.)

Share each finished book with the class and then place it in the classroom library, or let it become a traveling book, allowing each child a turn to take it home and show it off to his/her family.

Here are a few examples of ways students might choose to complete the pages of the first five books.

We See Numbers

Heather **saw** one furry kitten.

Sydney **saw** two waddling ducks.

Josh **saw** three spotted puppies.

Matt **saw** four grazing cows.

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We See Shapes

The sun is a circle.

A present is a square.

A tent is a triangle.

A chocolate bar is a rectangle.

We Can Measure

Kaylee measured the table and it was 48 inches long.

Allison measured the book and it was 9 unifix cubes tall.

Kevin measured the window and it was 3 feet wide.

Michael measured the sandwich and it was 10 centimeters wide.

Larger and Smaller

I am larger than a mouse and smaller than a house.

I am larger than a bird and smaller than a tree.

I am larger than a baby and smaller than a man.

I am larger than an ant and smaller than an elephant.

We Can Pattern

Annie has made a pattern of fish.

Jerry has made a pattern of apples.

Susan has made a pattern of flowers.

Christopher has made a pattern of faces.

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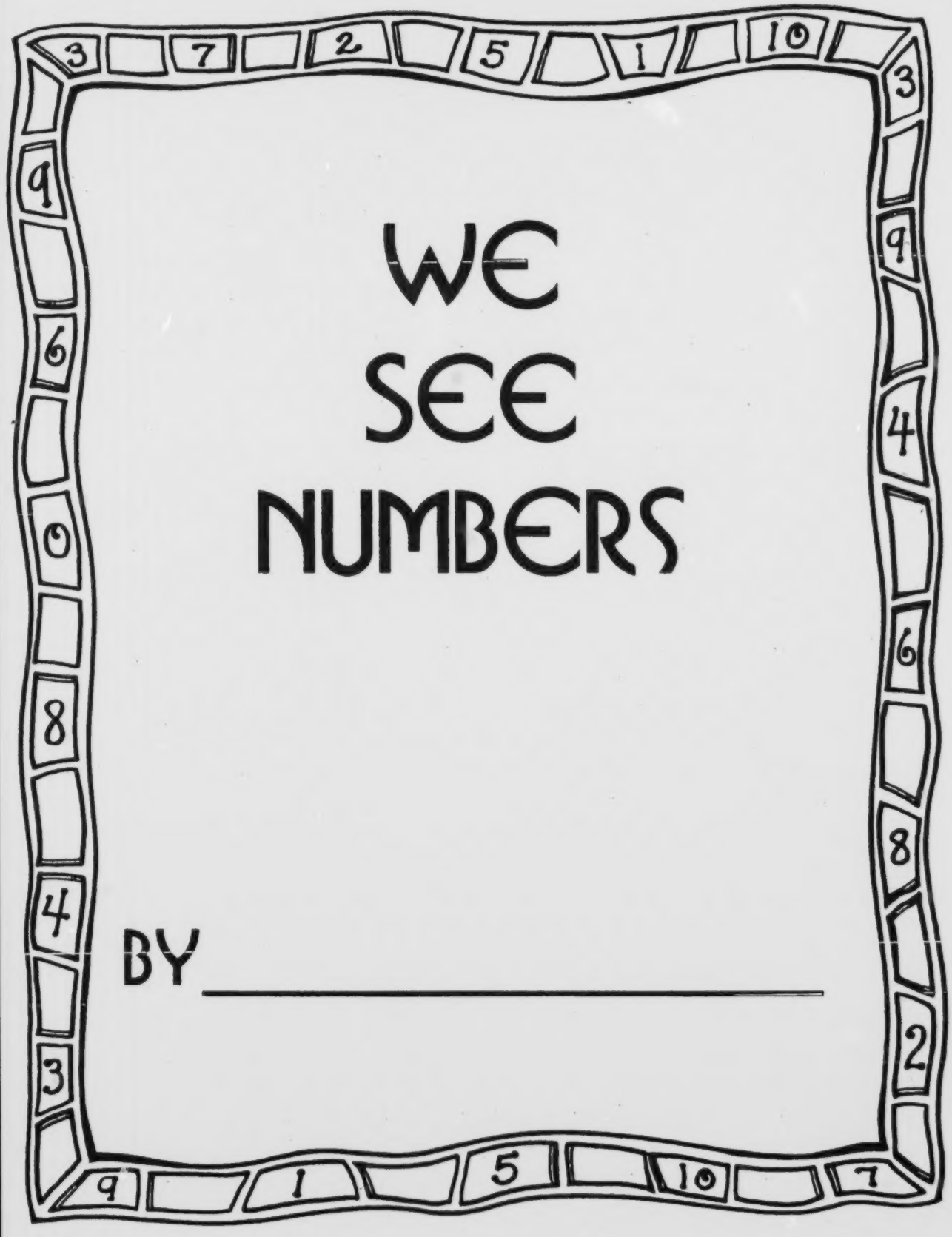
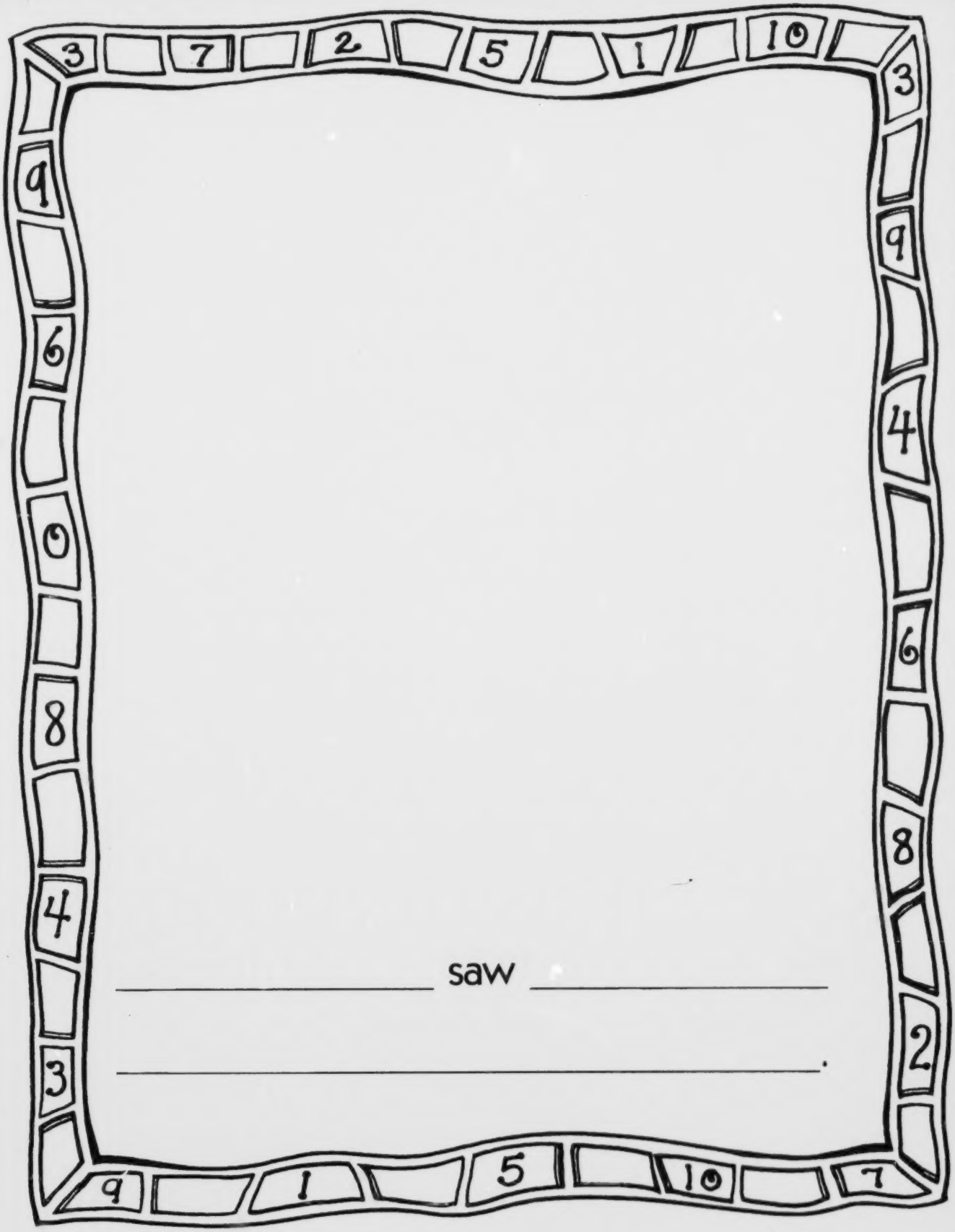

3 7 2 5 1 10
9 6 0 8 4 3
3 9 4 6 8 2
9 1 5 10 7
WE
SEE
NUMBERS
BY _____



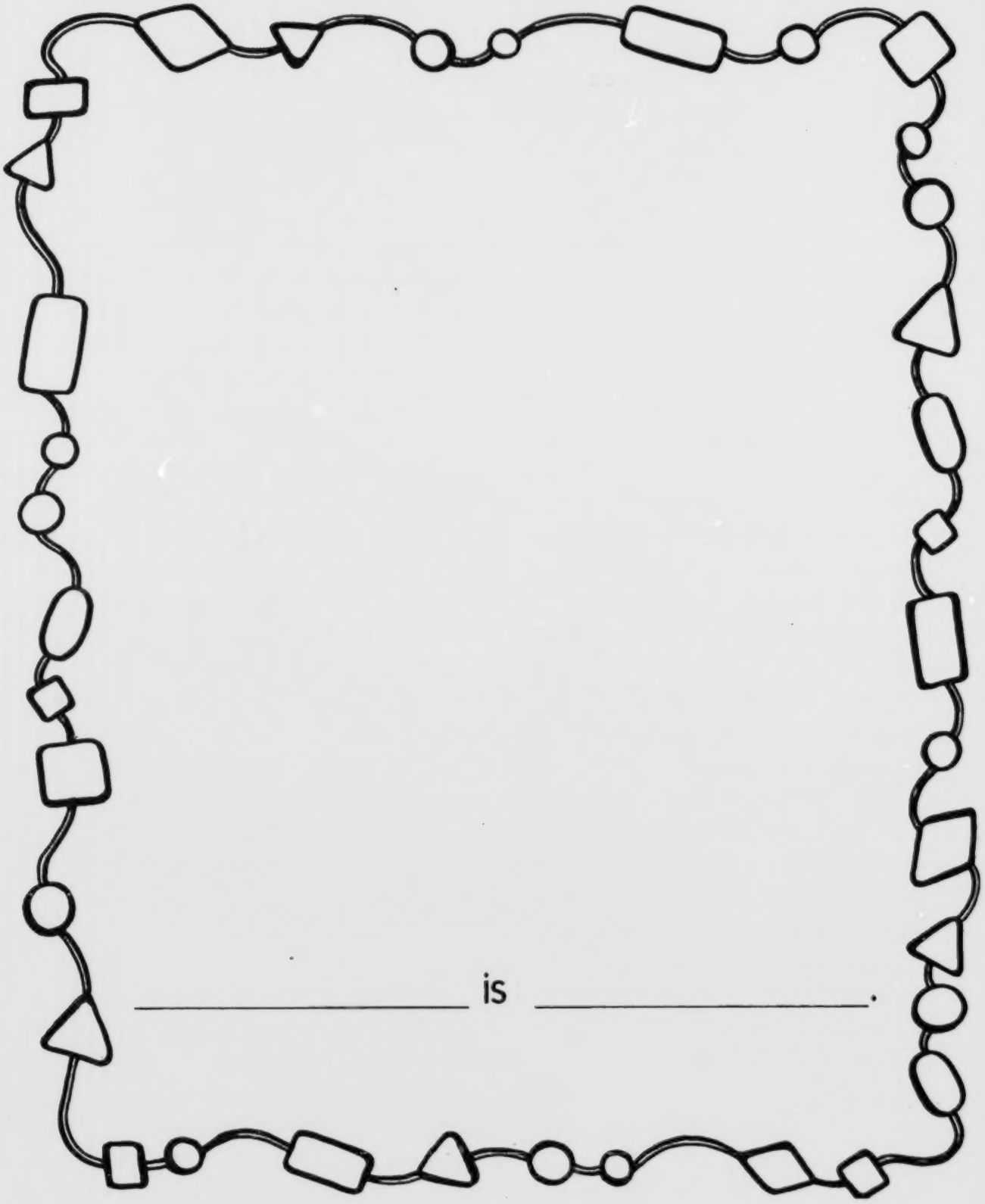
_____ saw _____

_____.

We See Shapes

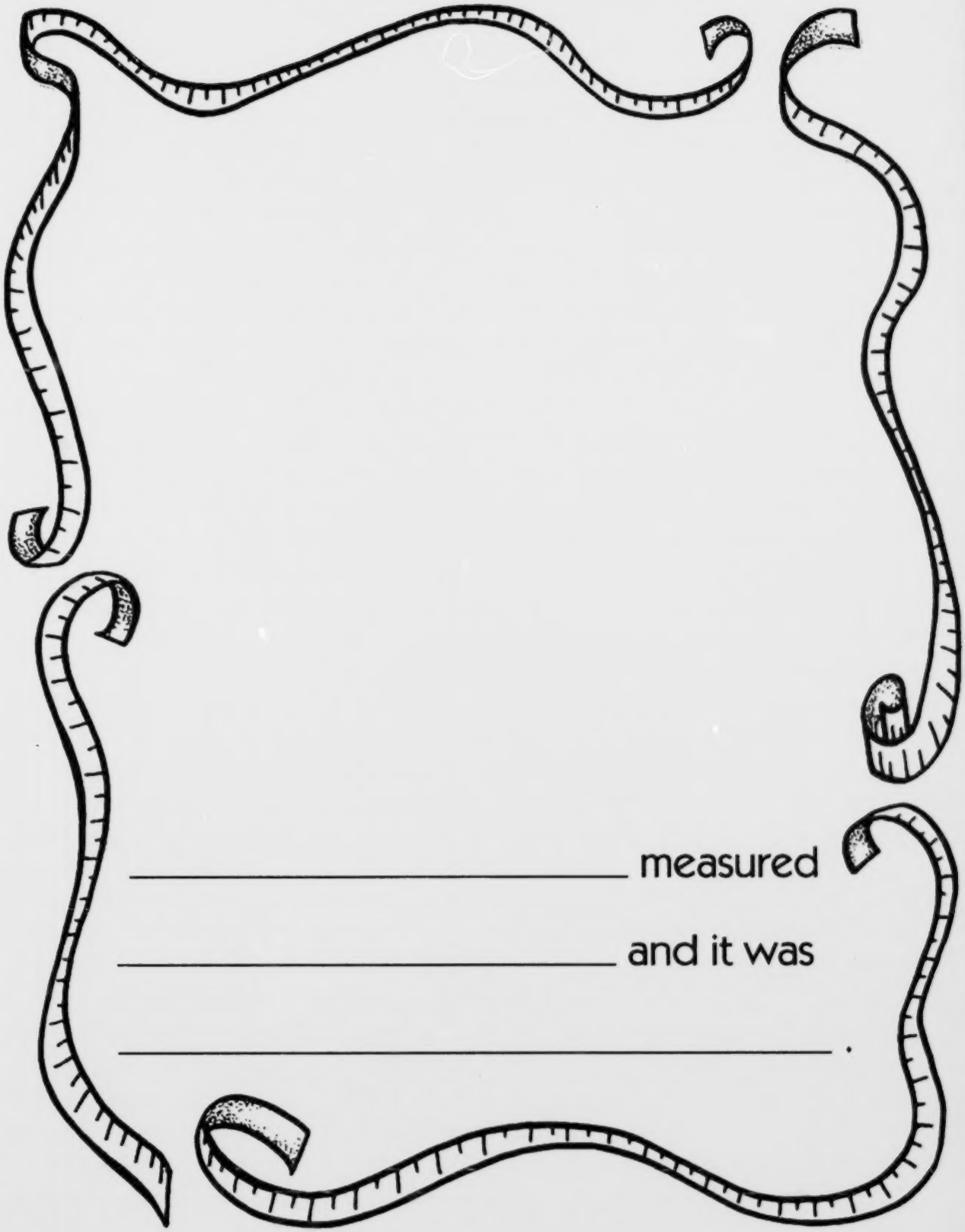
By _____

Name: _____



_____ is _____.

We
Can
Measure
by _____



_____ measured

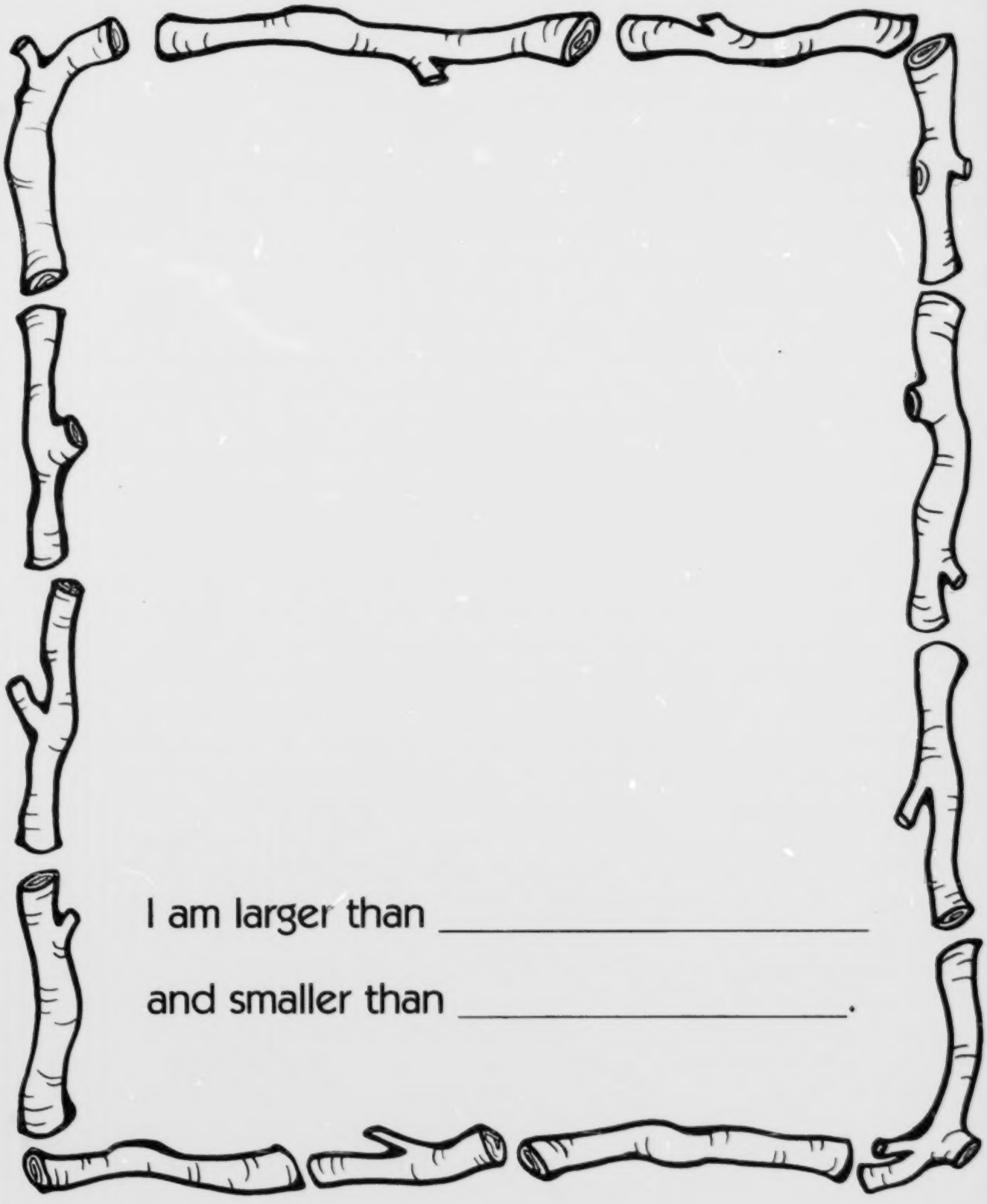
_____ and it was

_____ .

Larger and Smaller

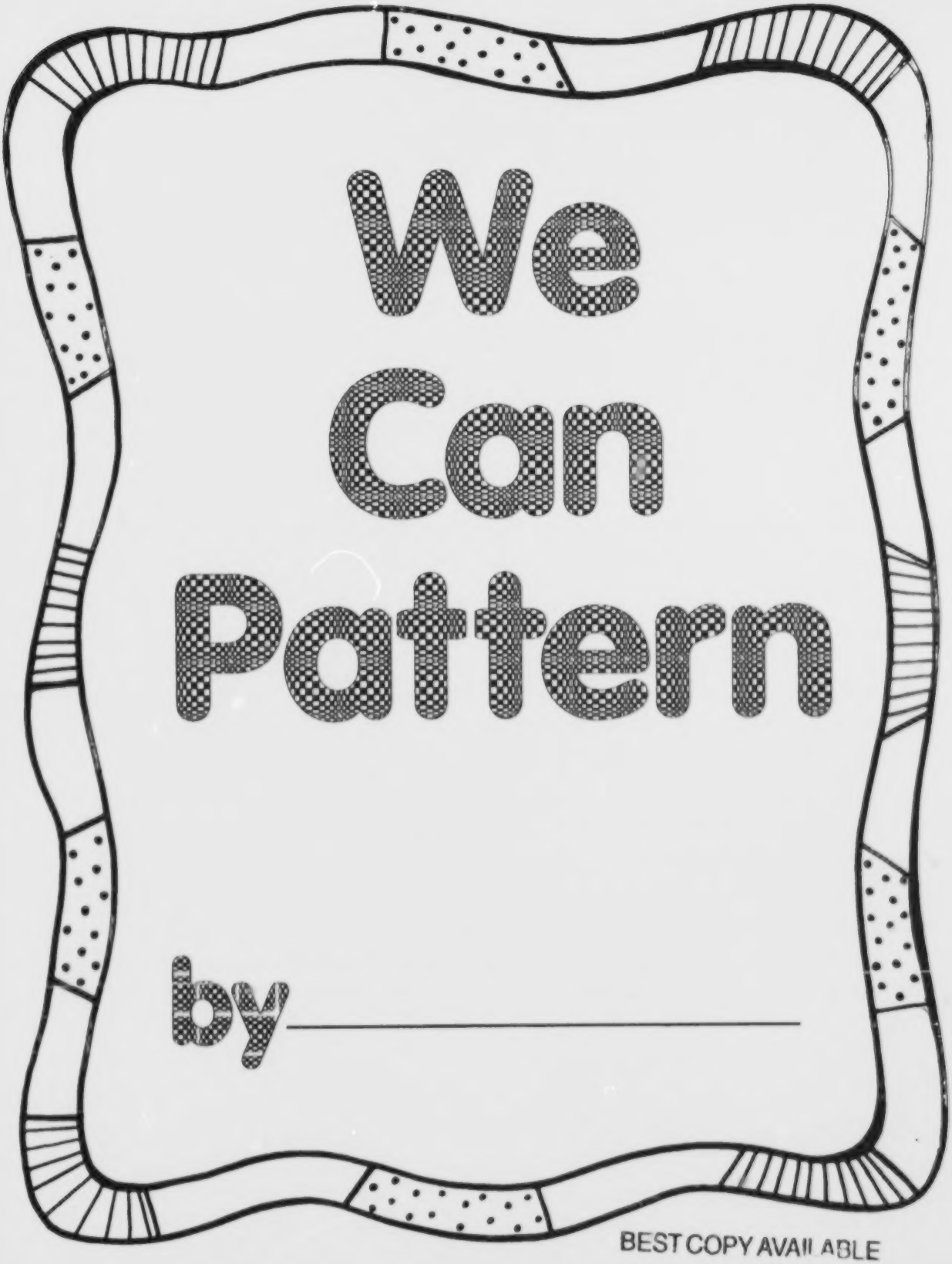
By _____

Name: _____



I am larger than _____

and smaller than _____.



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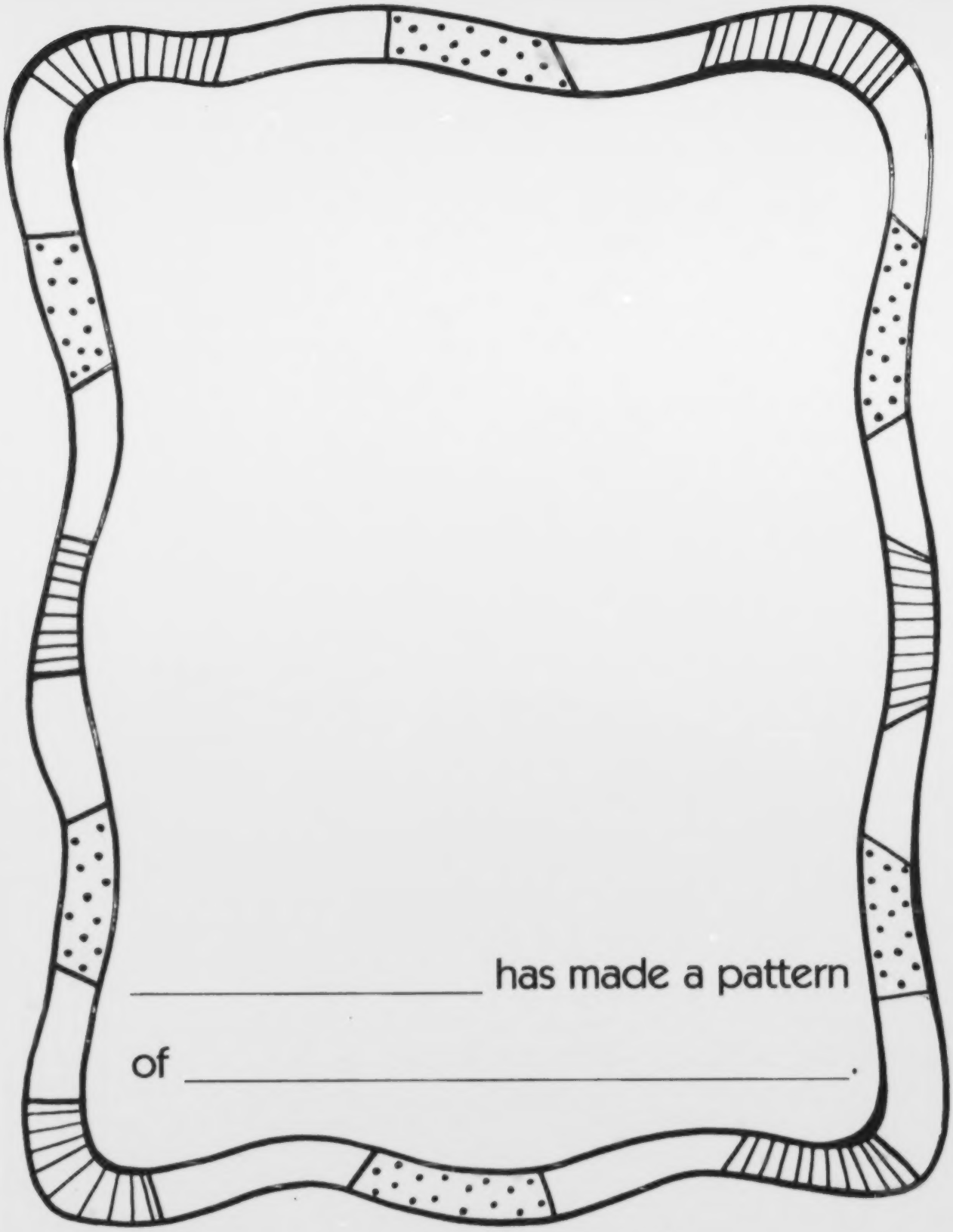


_____ has made a pattern

of _____.

Classmates

By: _____

I have _____ hair.

I have _____ eyes.

My name is _____.

Hair Color Graph

Brown	Black	Red	Blond

Eye Color Graph

Brown	Blue	Hazel	Green

1 2 3 Count with Me: Multipurpose Number Cards with Picture Cues

Number cards are extremely helpful for young children who are just beginning to establish number sense. You can incorporate these cards into your math program in many fun and exciting ways, perhaps beginning with some of the following ideas.

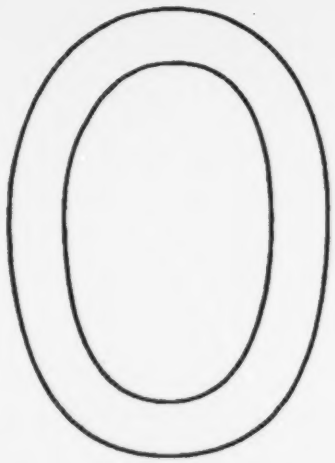
Hats. Photocopy a number-card pattern on construction paper. Have each student color his/her number card and cut it out. Staple the number card onto a 2-inch by 18-inch strip of construction paper to fit each child's head.

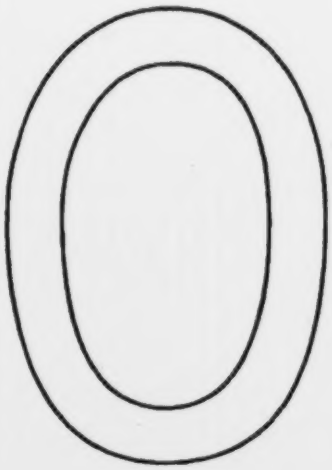
Flash cards. Photocopy the number-card patterns on card stock or construction paper, and have the children color and cut them out. Let each child take his/her set home for practice, or laminate the cards and use them in a classroom number center or in a tutoring activity.

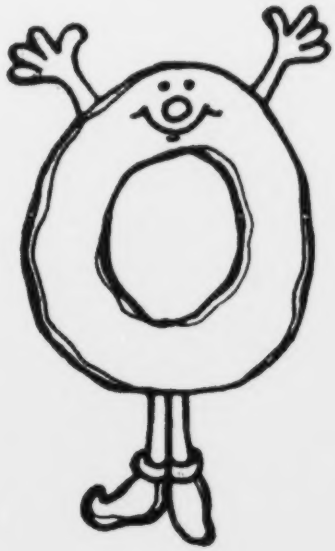
Number line. Photocopy the number-card patterns, and have the students color them and cut them out. Display each number card on a classroom wall or bulletin board in numerical order. Post the number line in its entirety before school begins, or build it as each new number is introduced. Alternatively, let the children create the number line themselves. Shuffle the cards, then ask students to place them in a number line. Count up the number line together to make sure they have the correct order.

Stick puppets. Photocopy the number-card patterns, have the students color and cut out the cards, and then glue or staple a craft stick onto the back of each card. Use these number-card puppets to introduce each new number or to emphasize one that has been introduced earlier.

Coloring book. Copy the number-card patterns and bind them into book form with staples or a comb binding. Encourage the children to color the resulting books either at a math center or individually.







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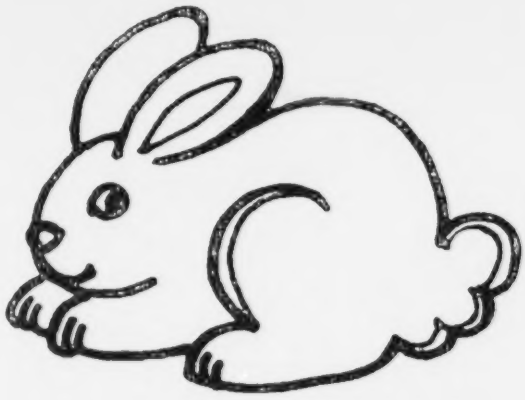

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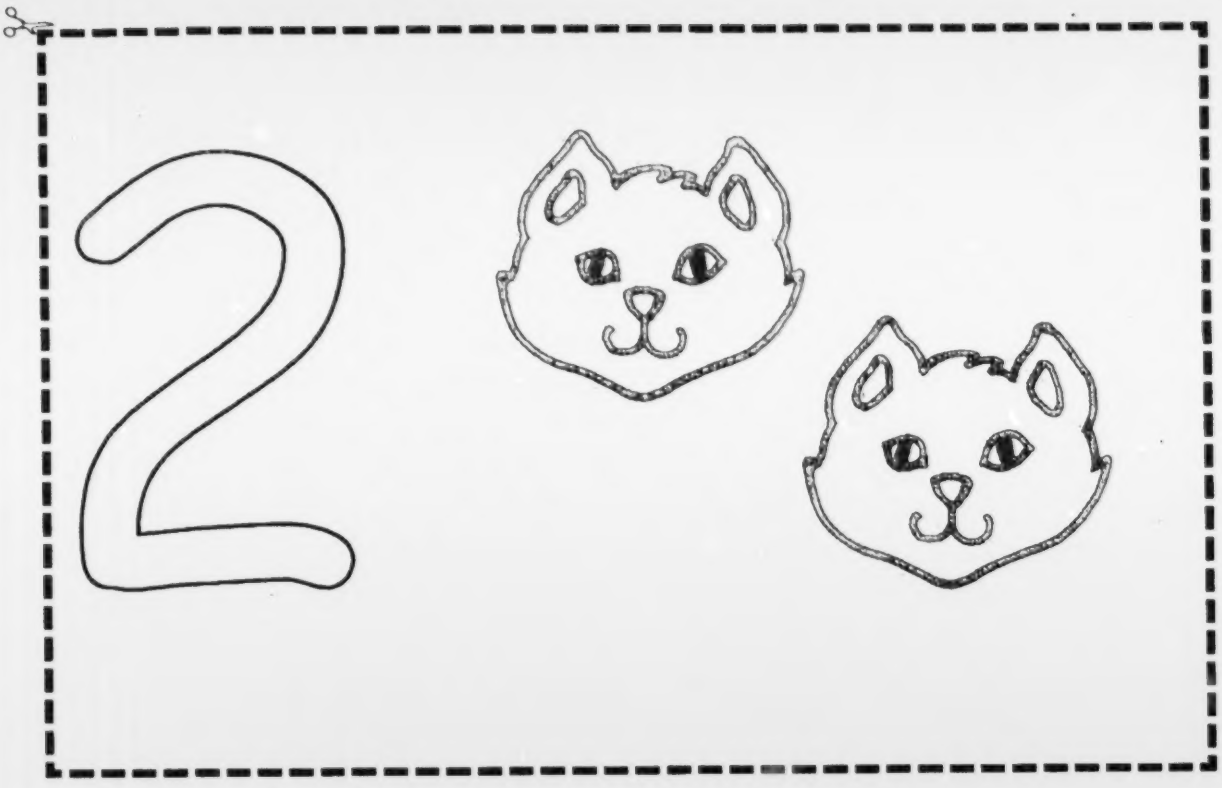

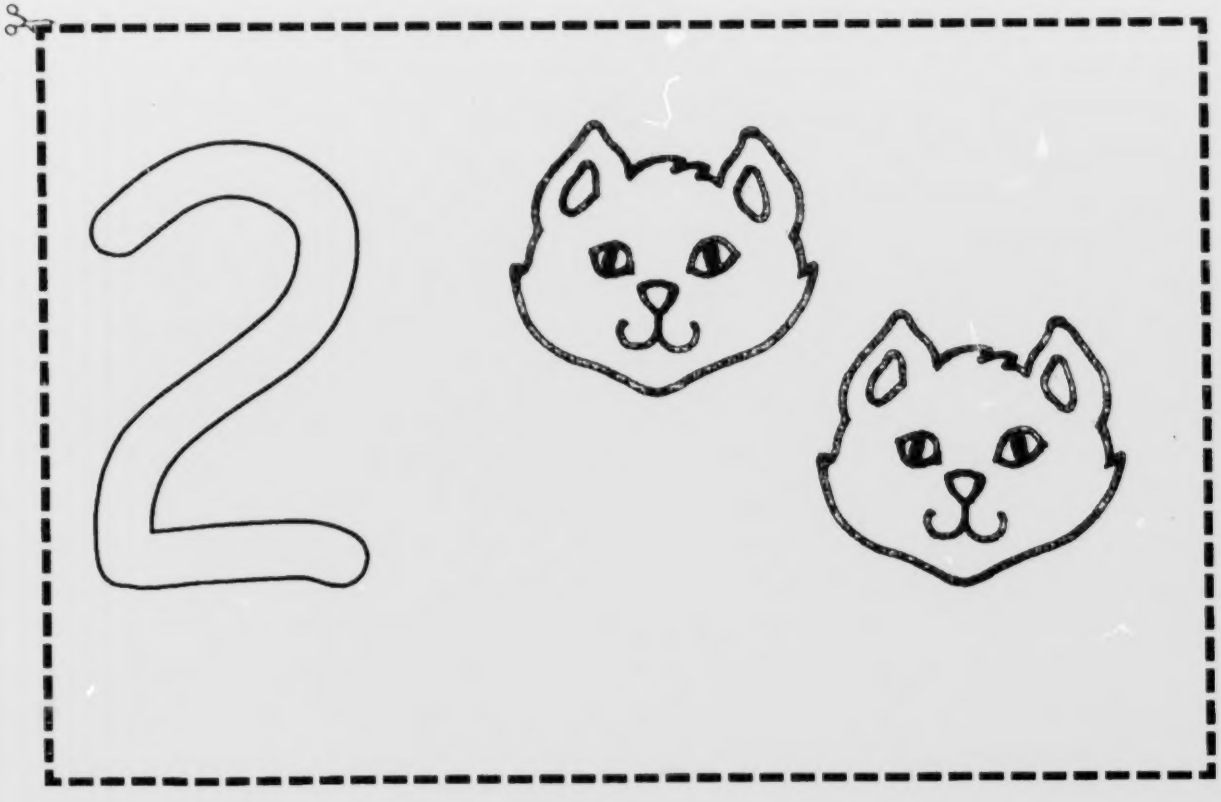

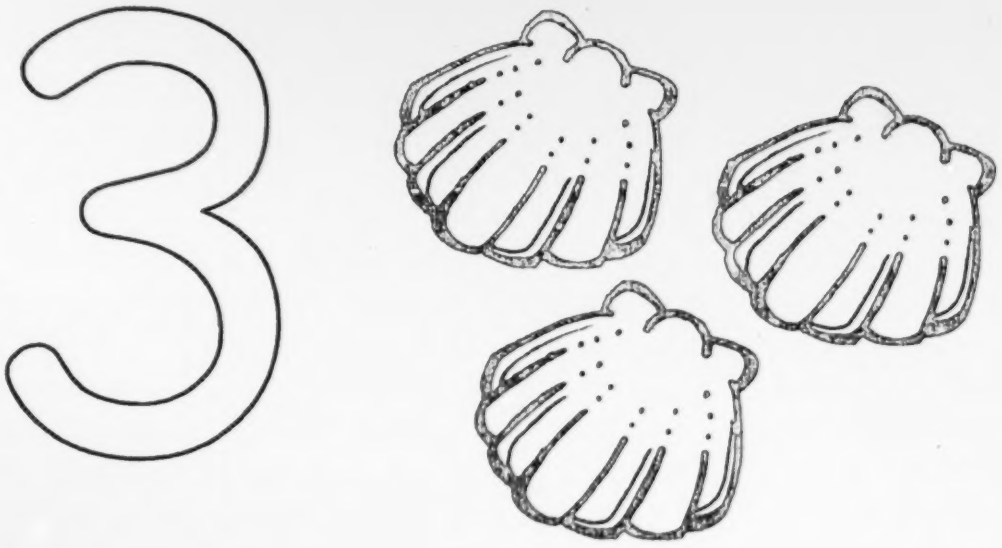

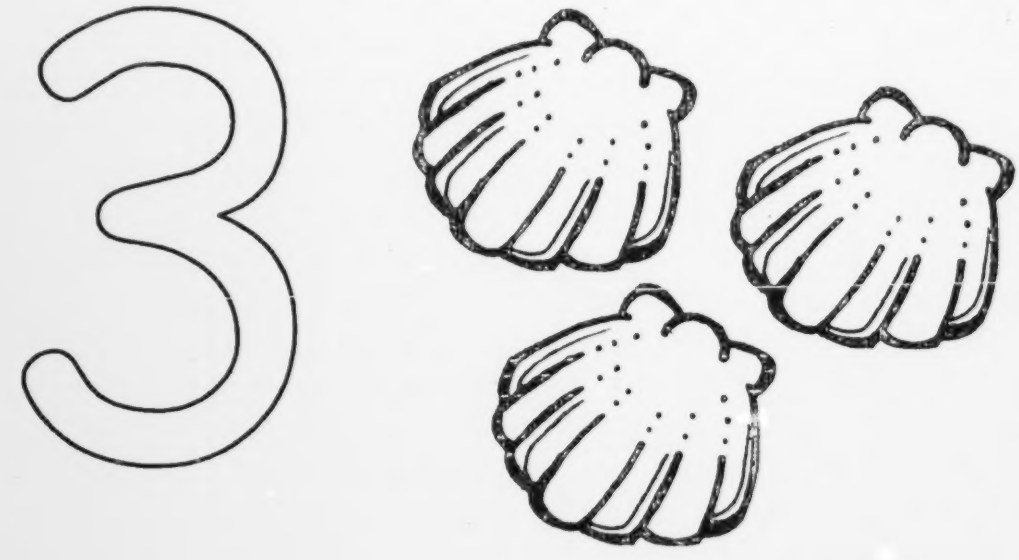

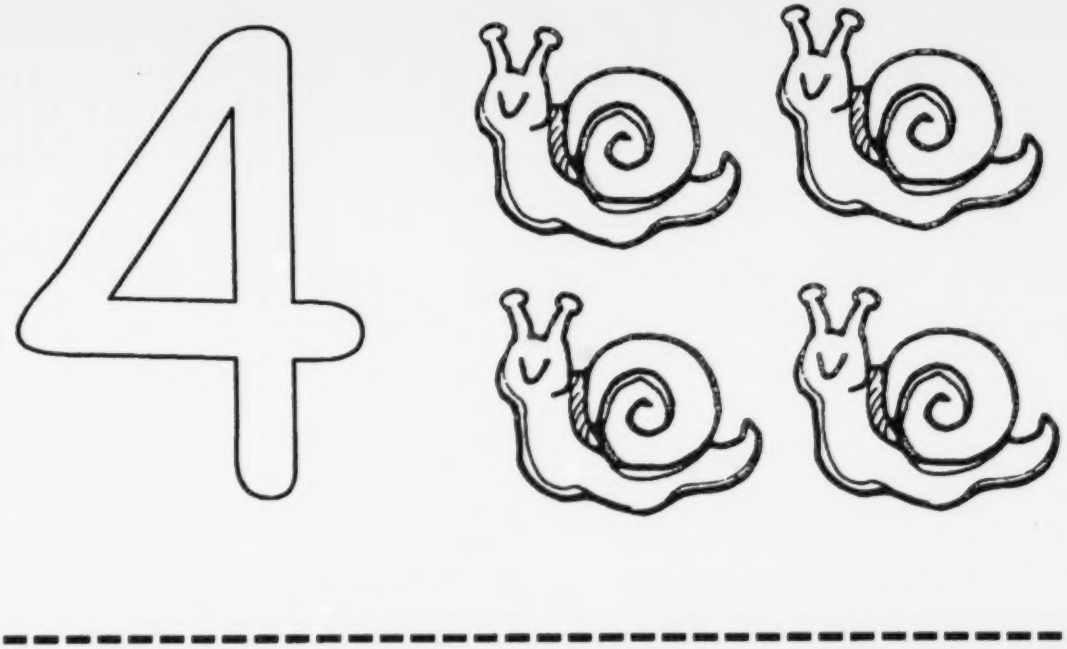

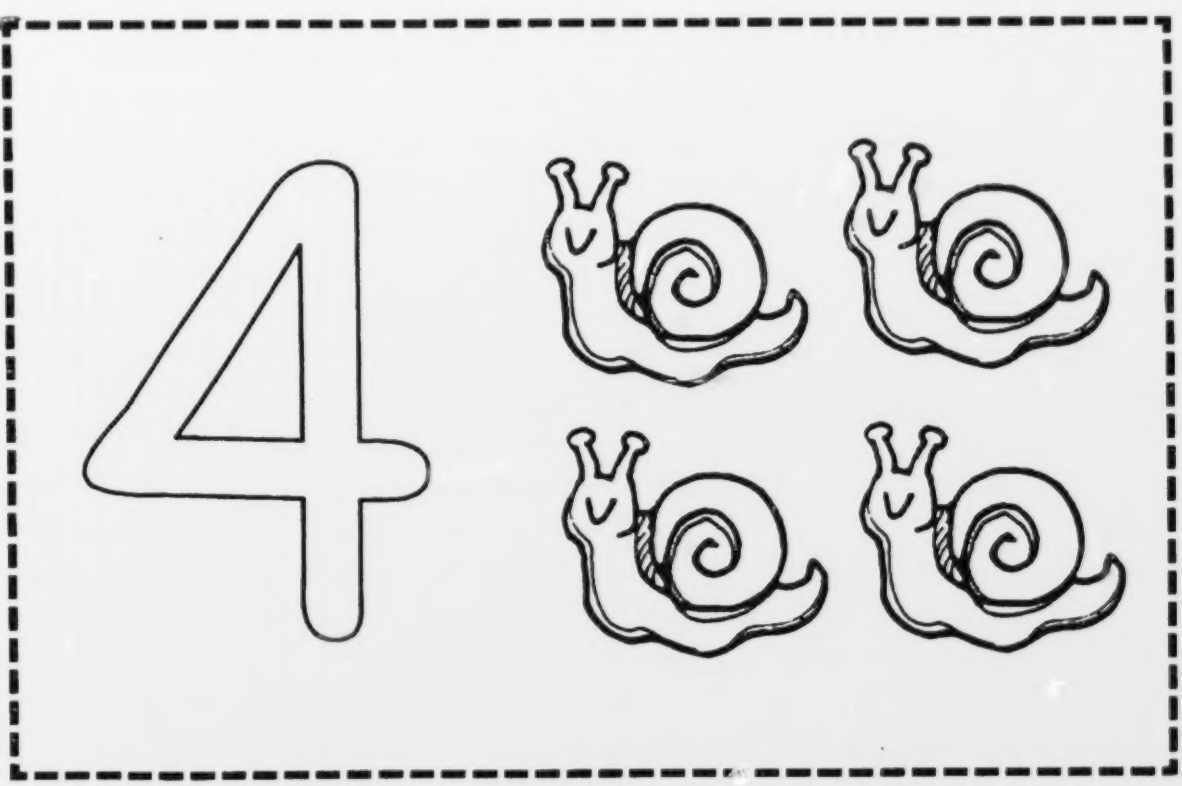

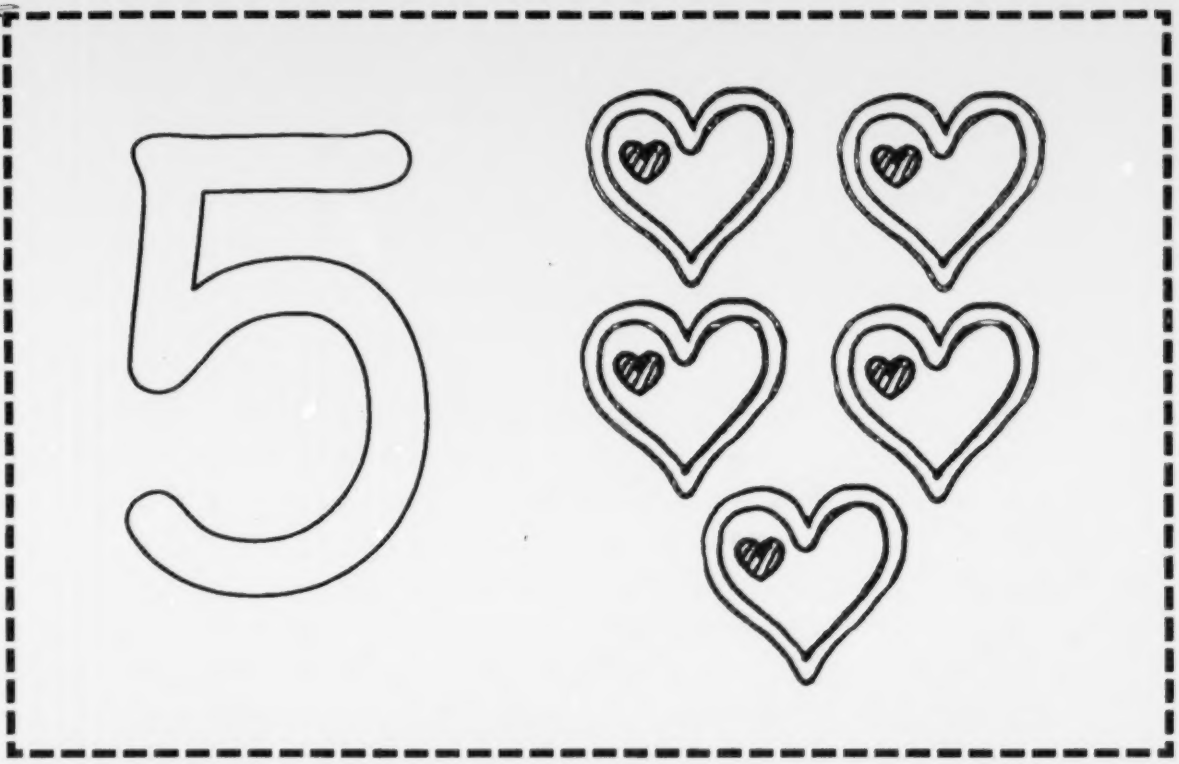

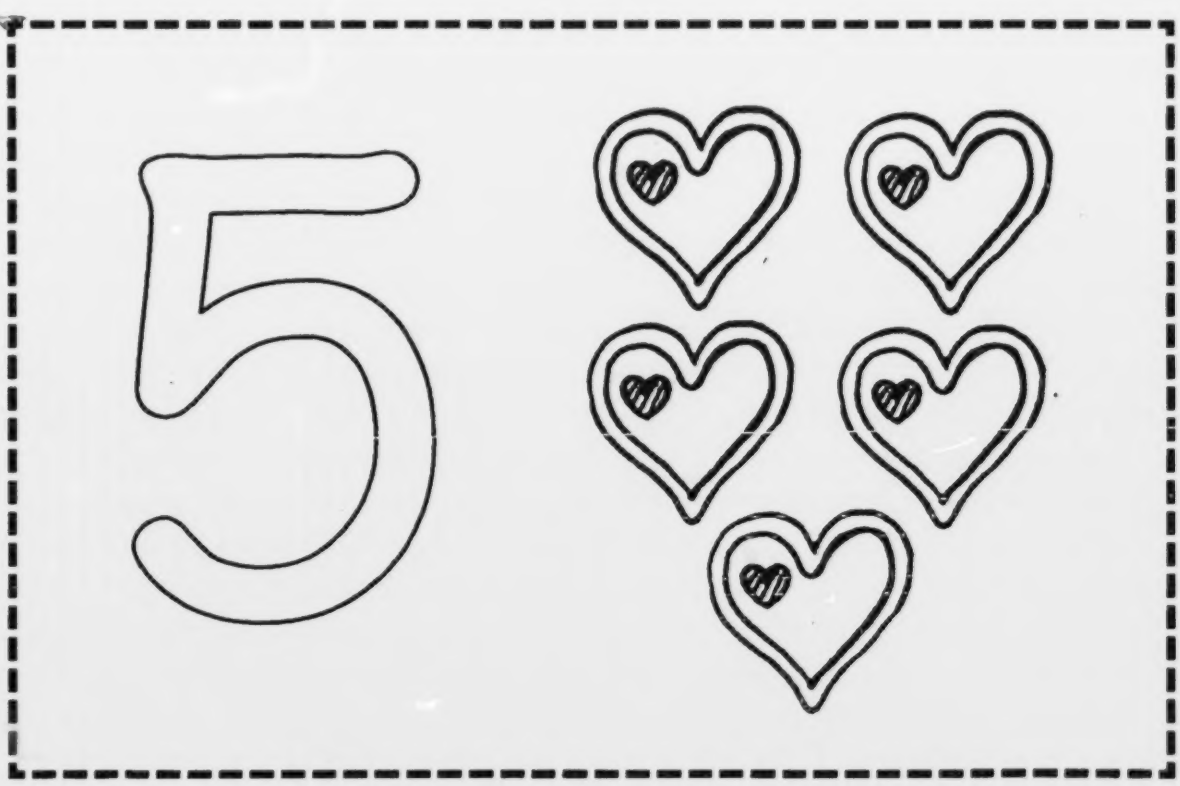

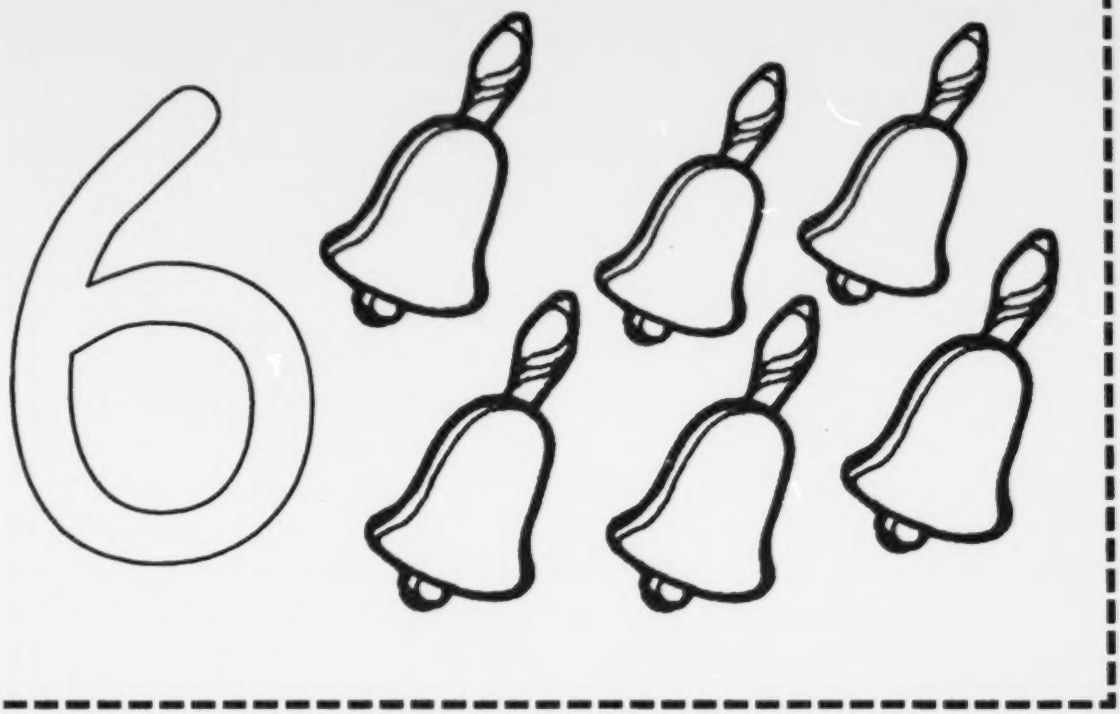

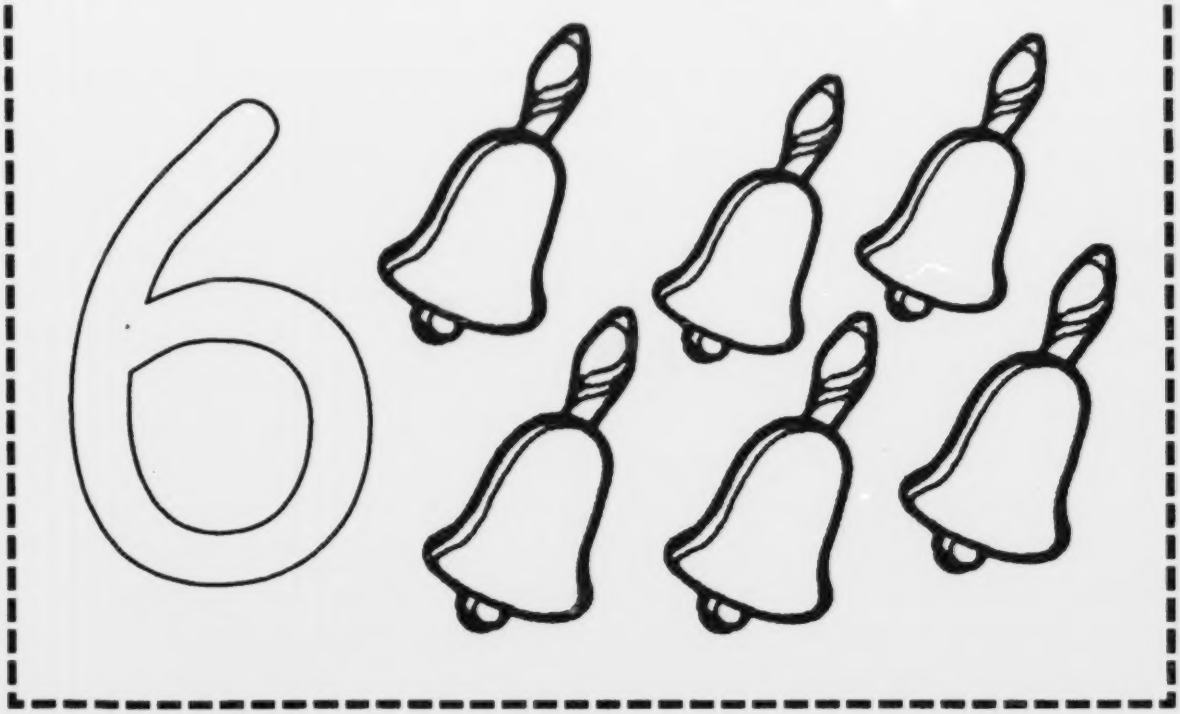

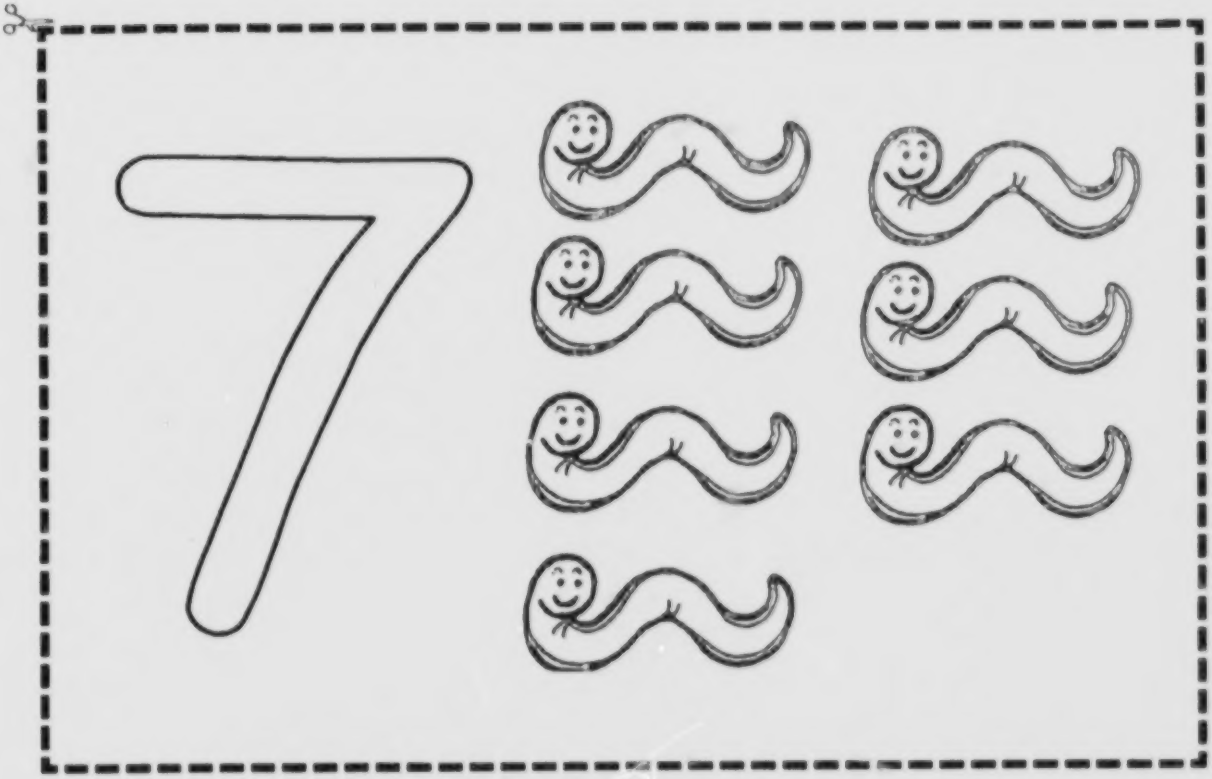

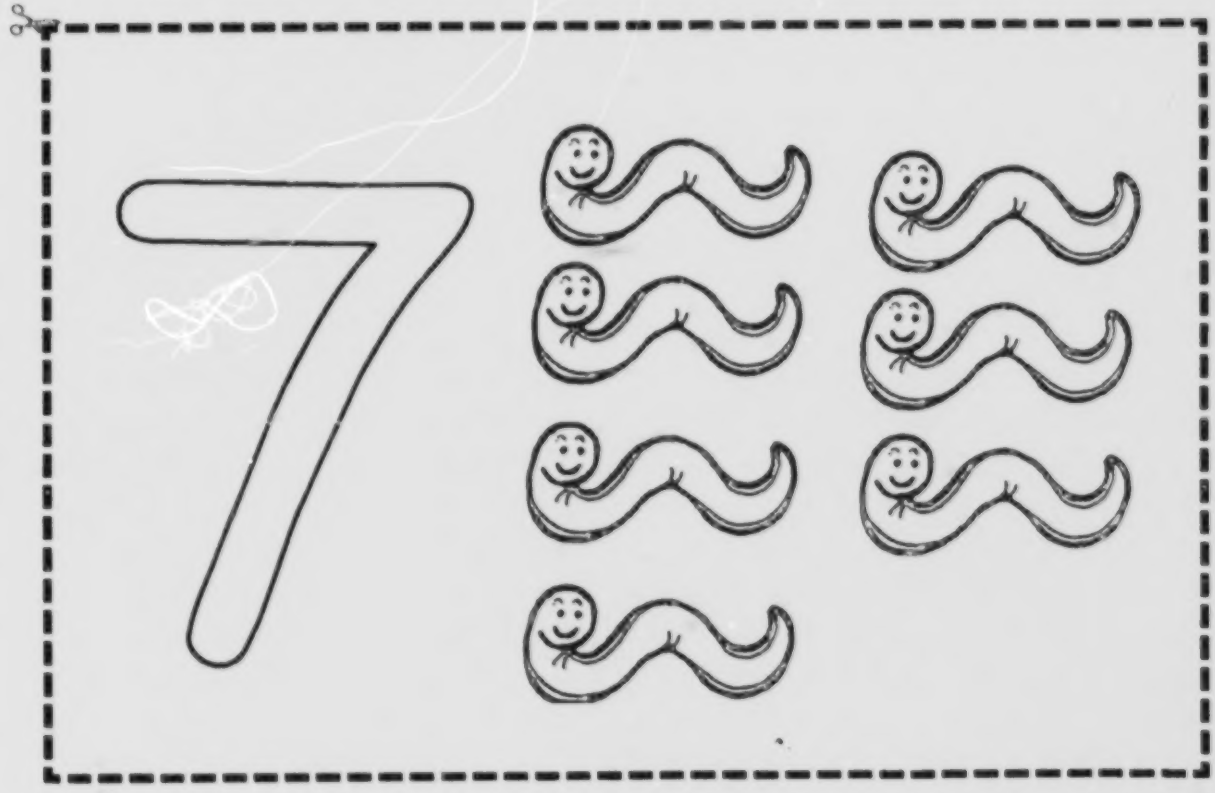

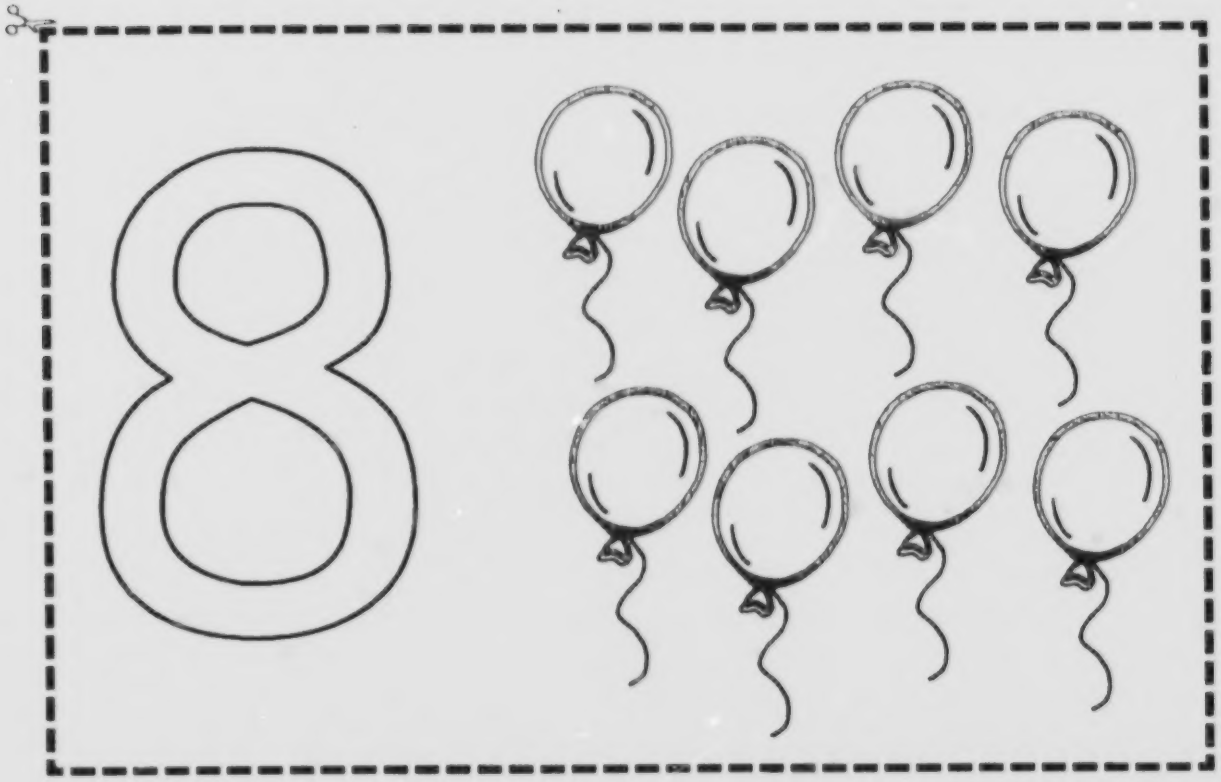

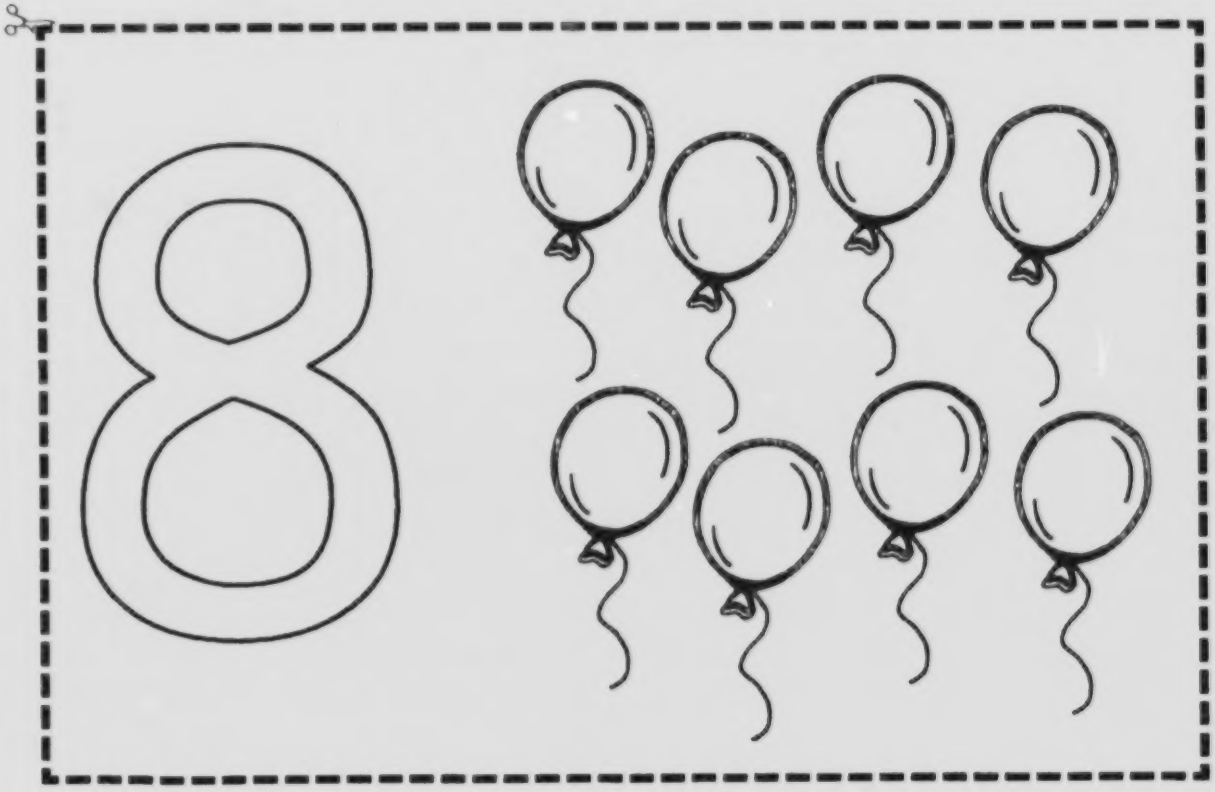

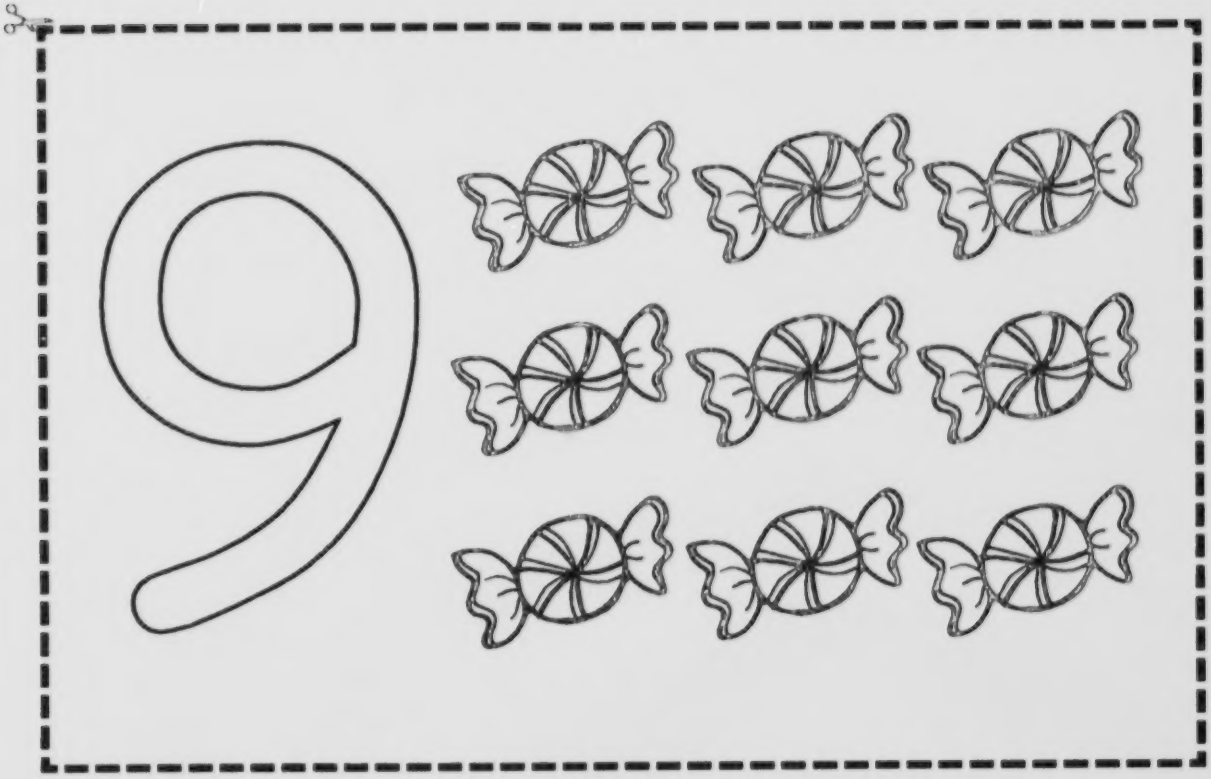

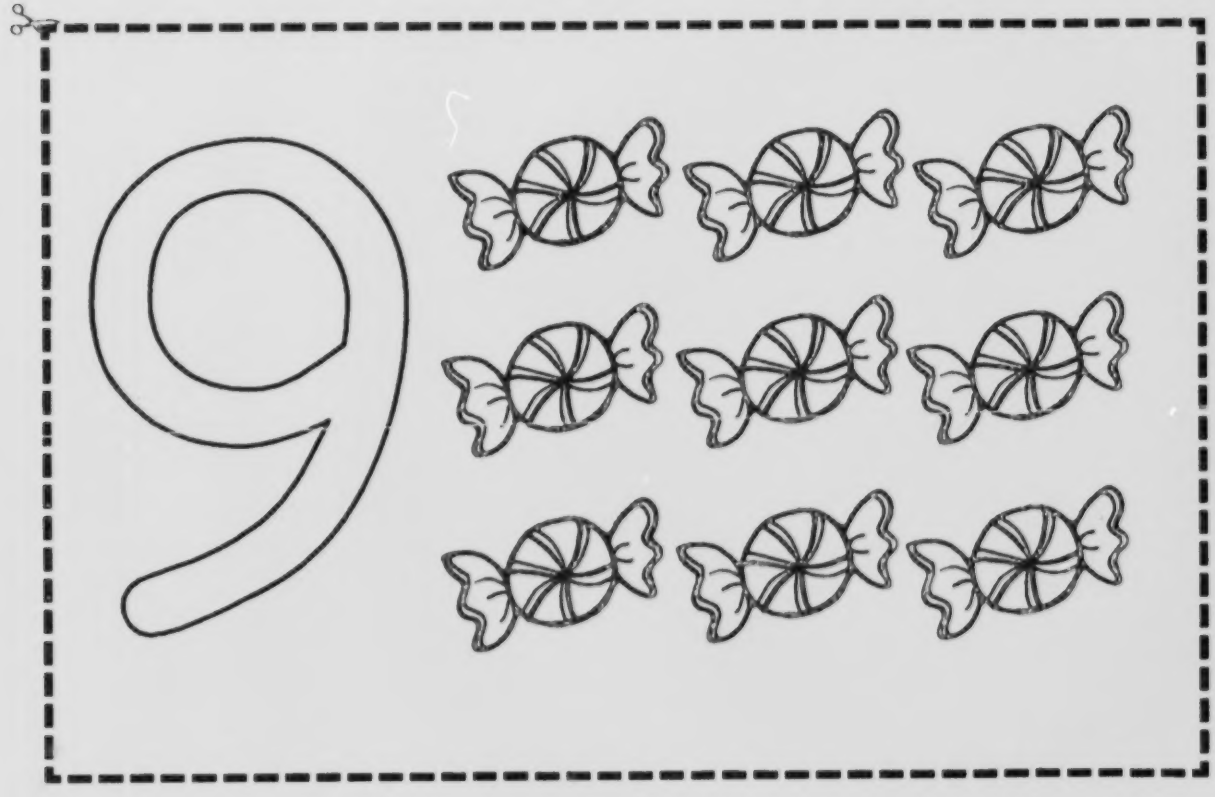

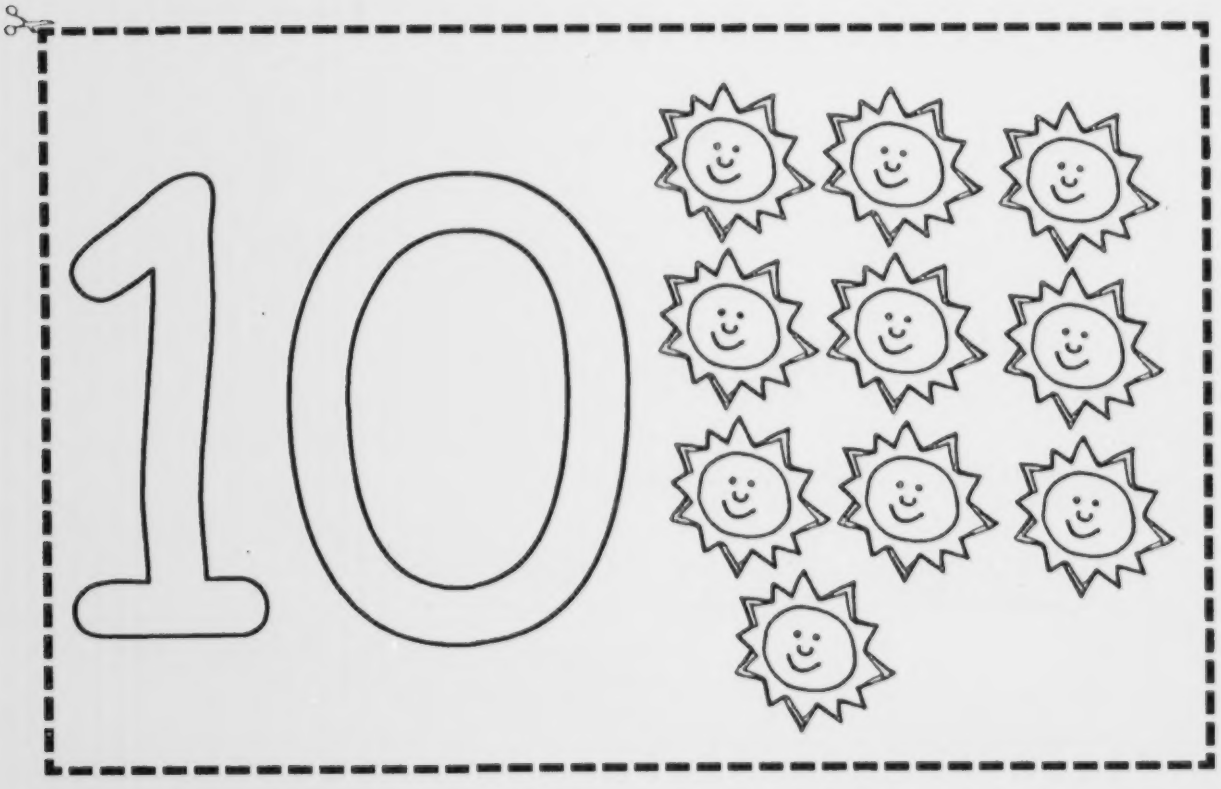
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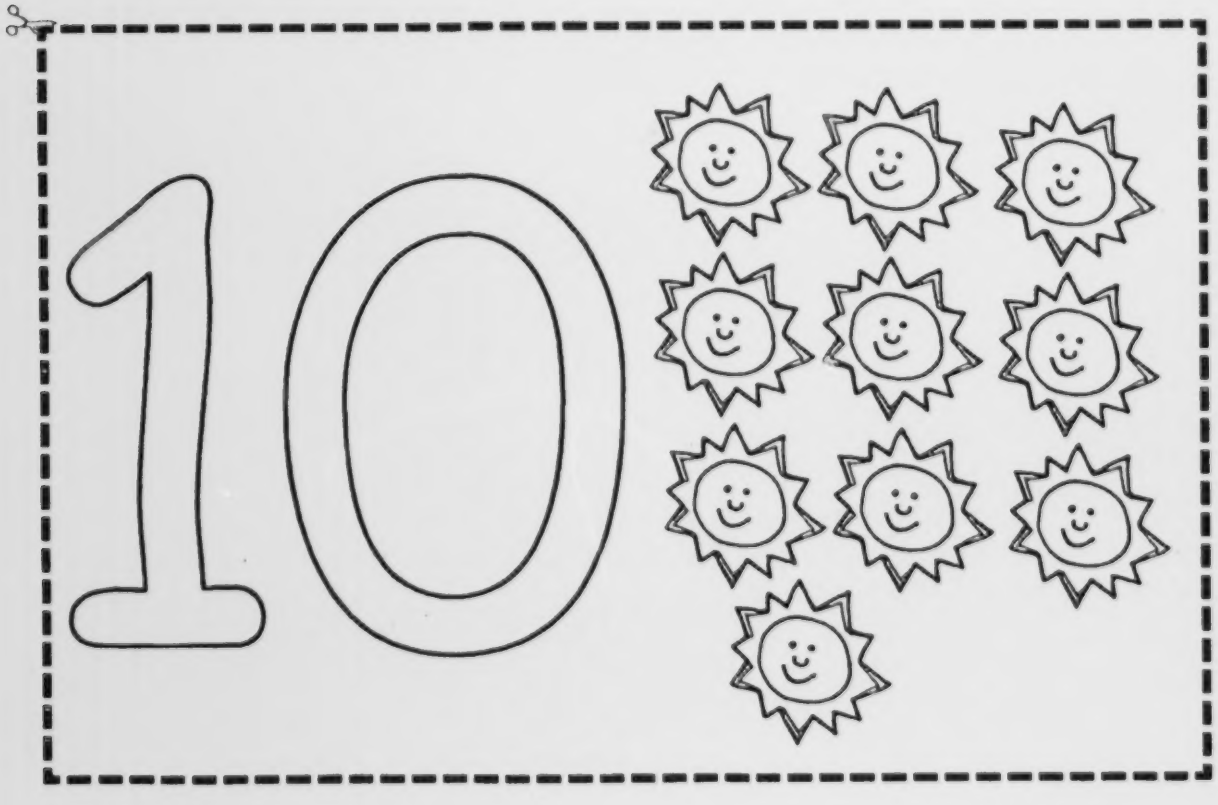
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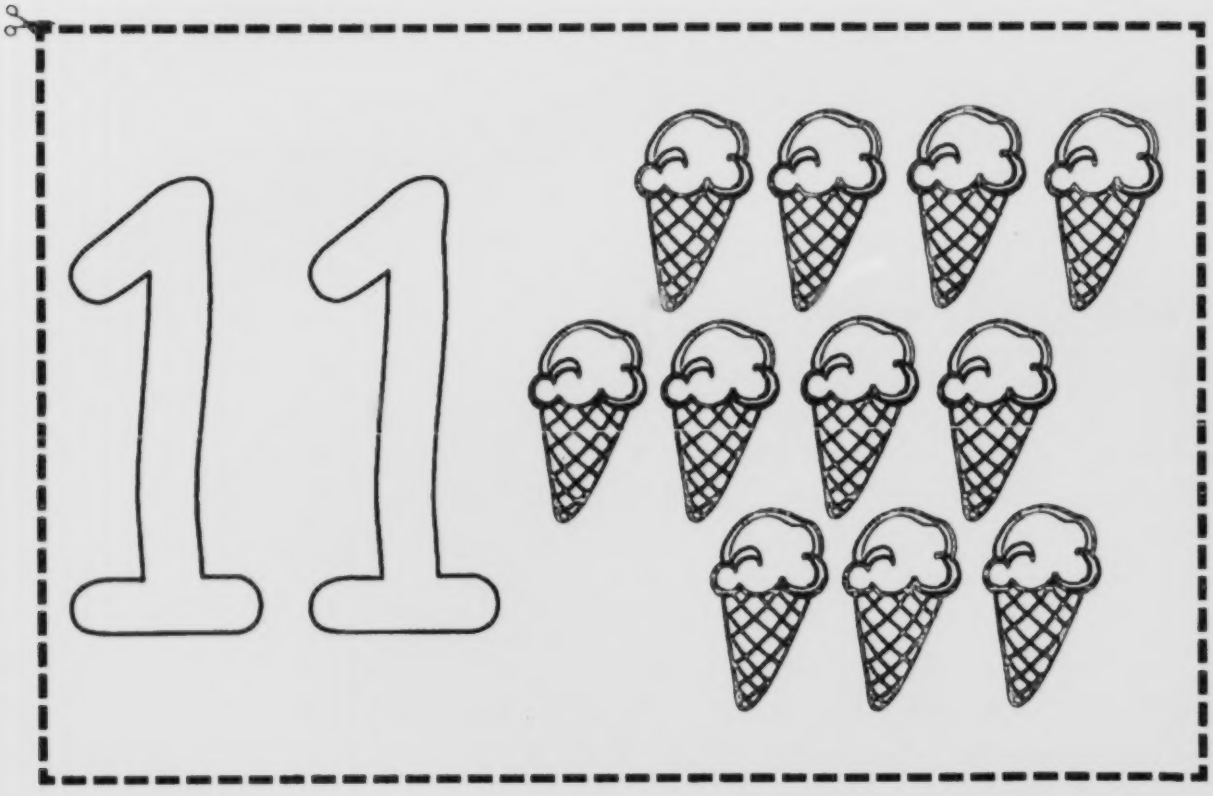
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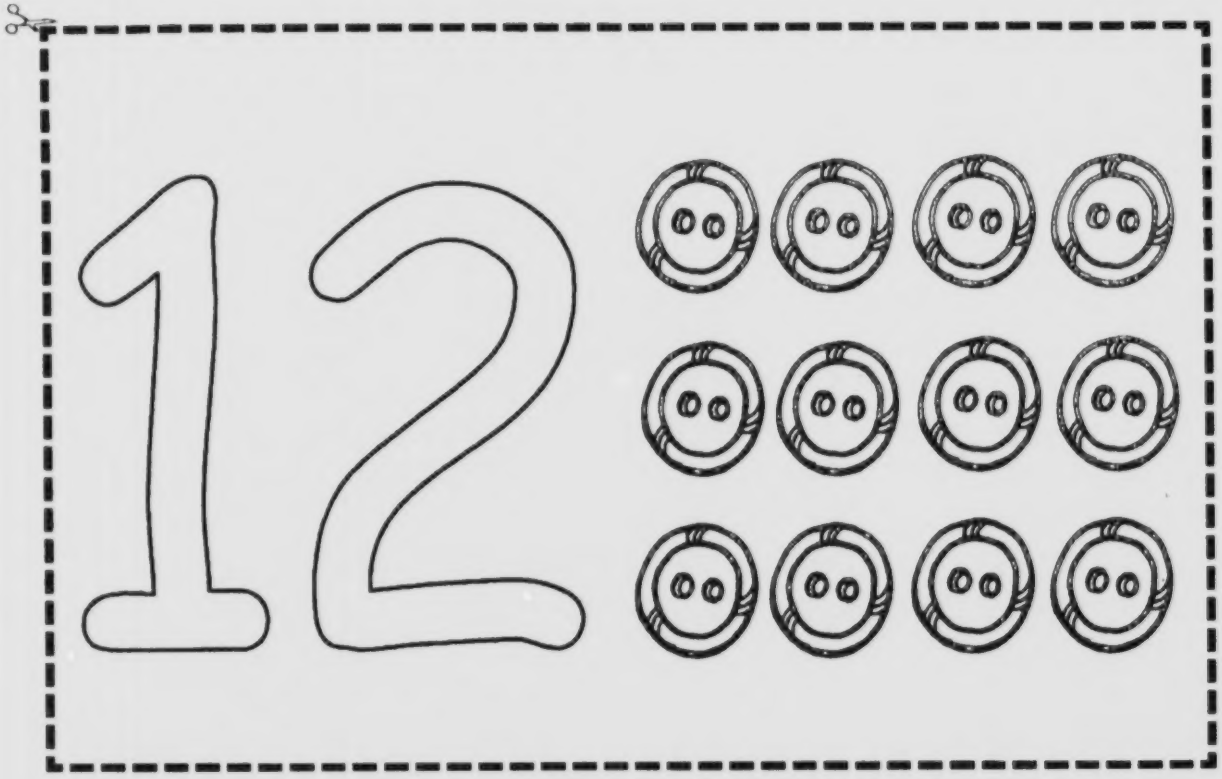
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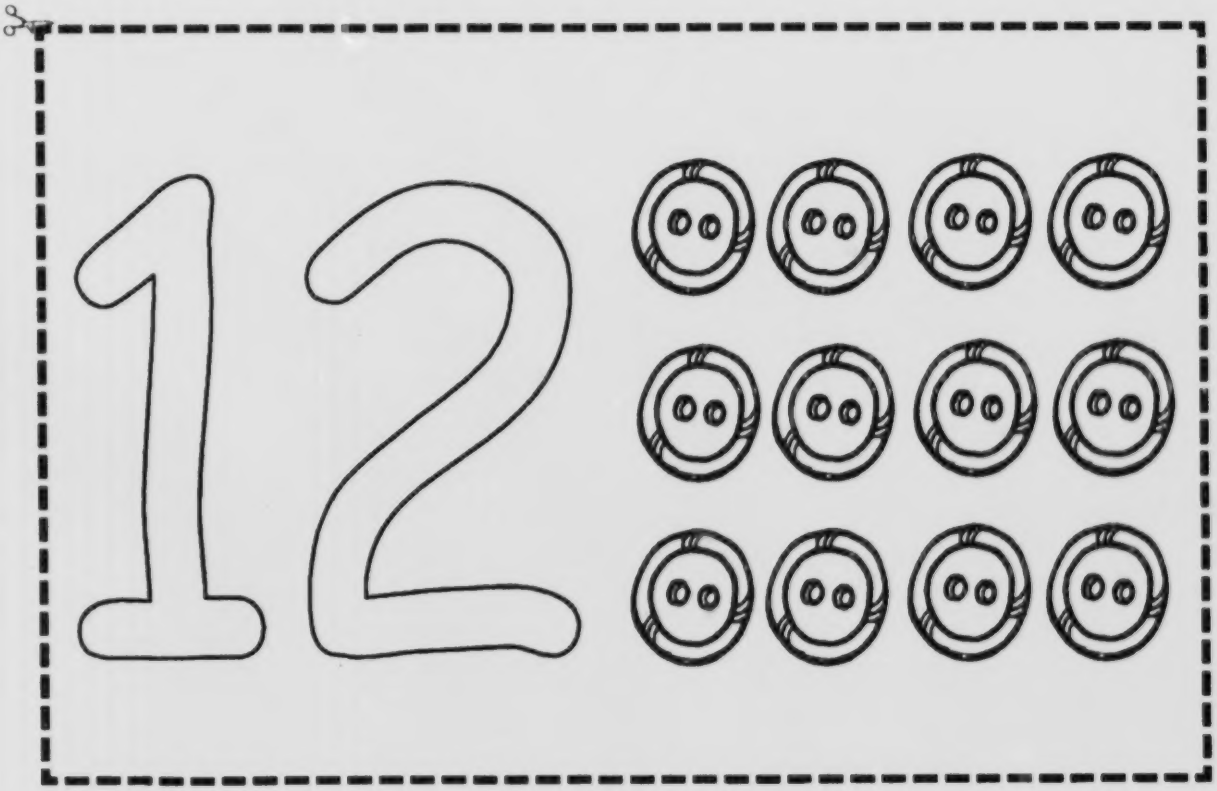
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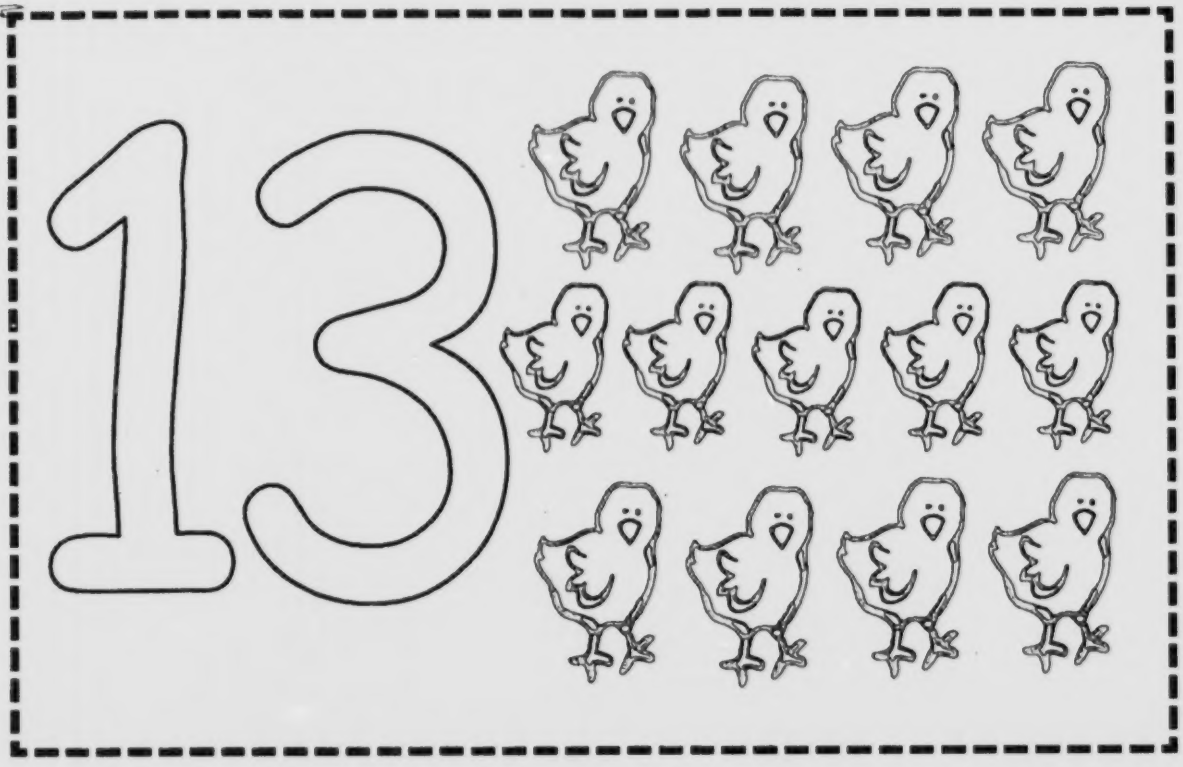
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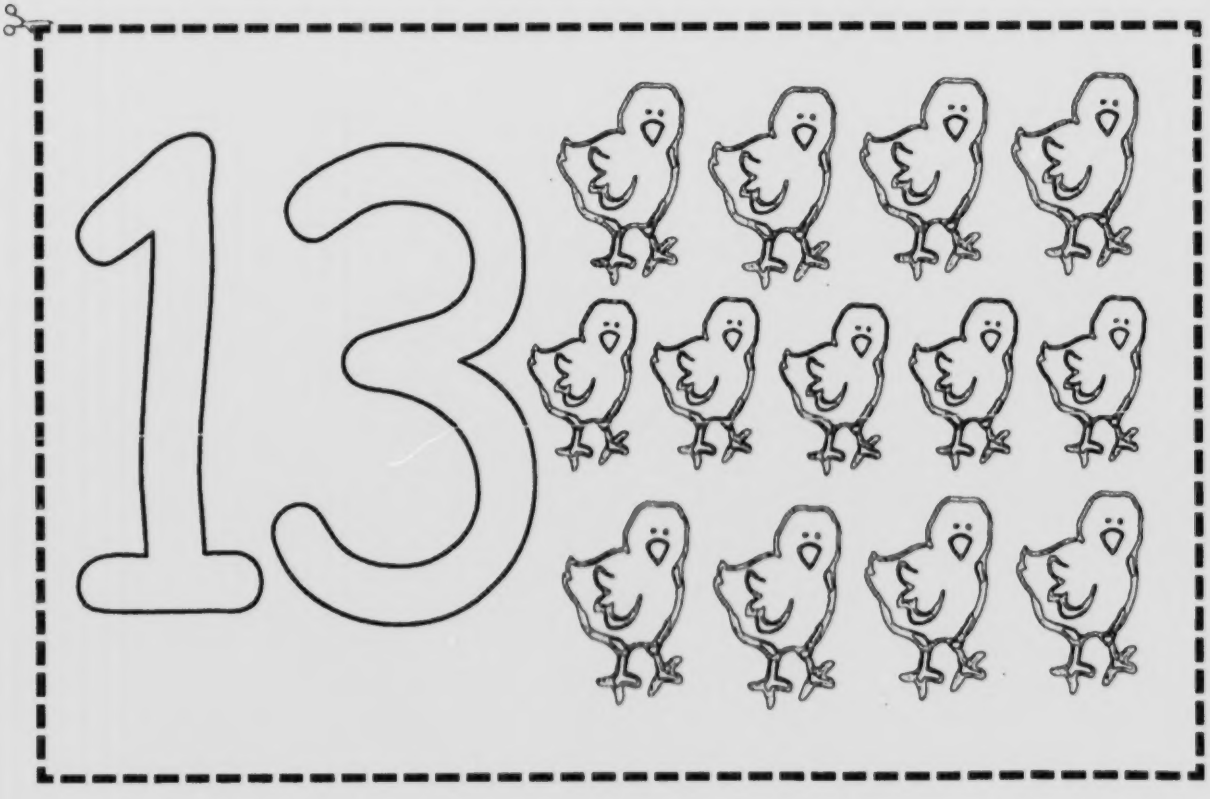
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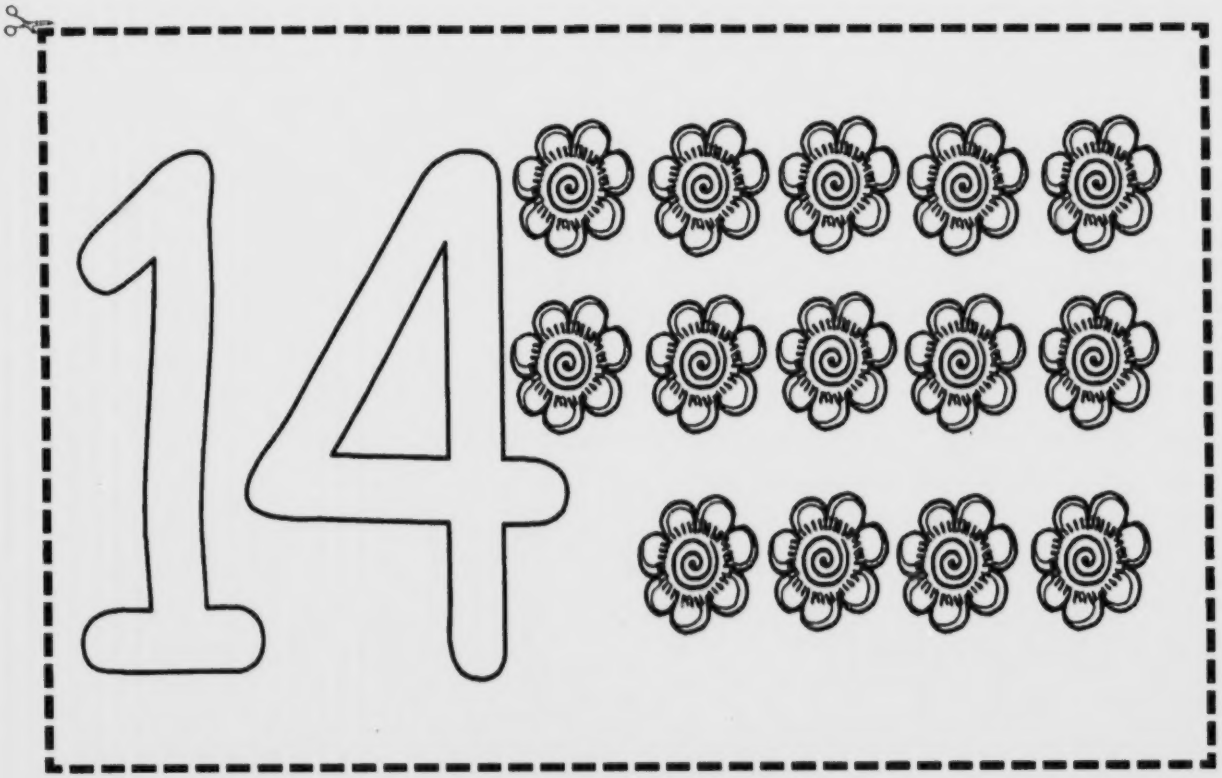
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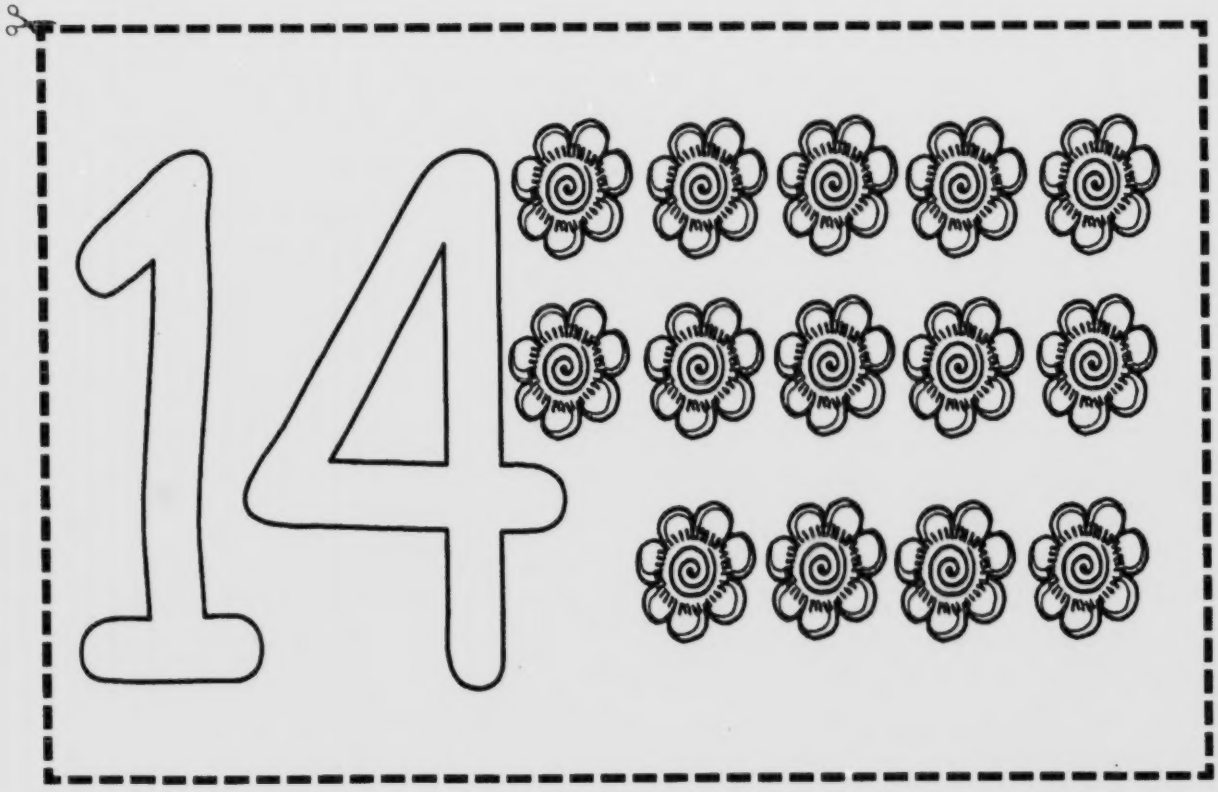
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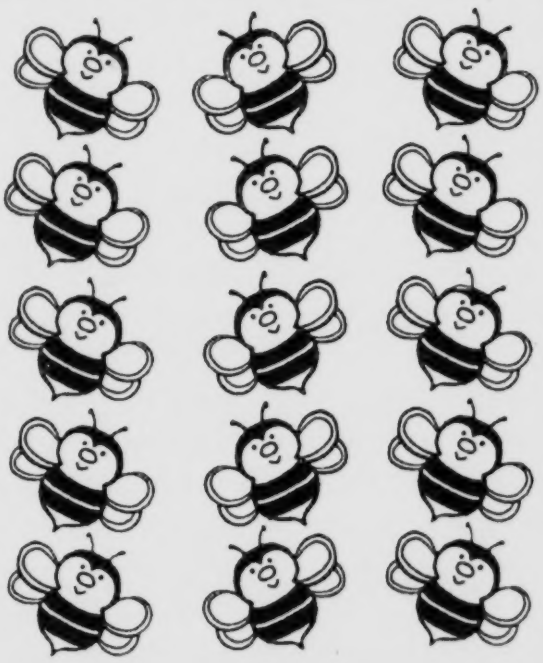

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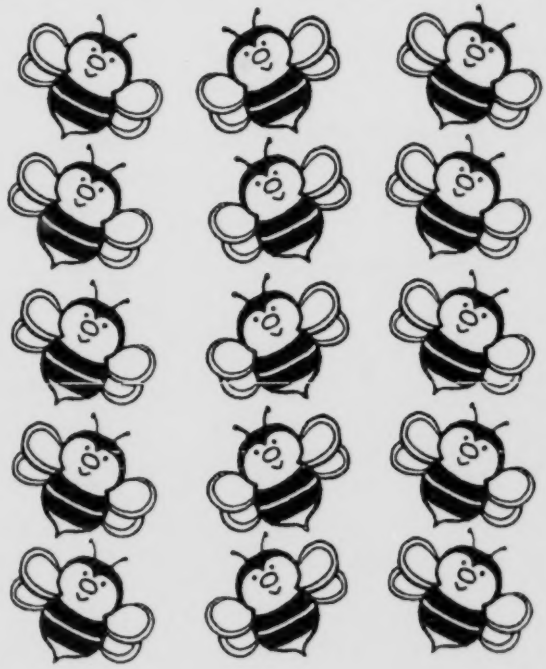

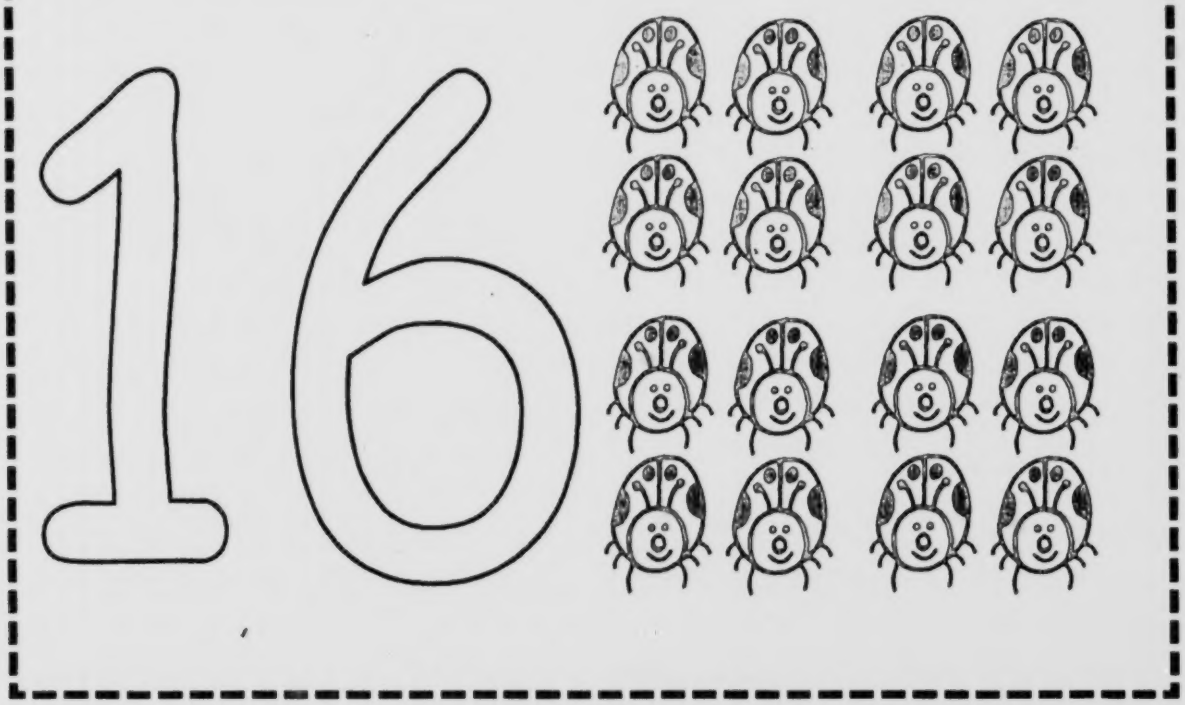

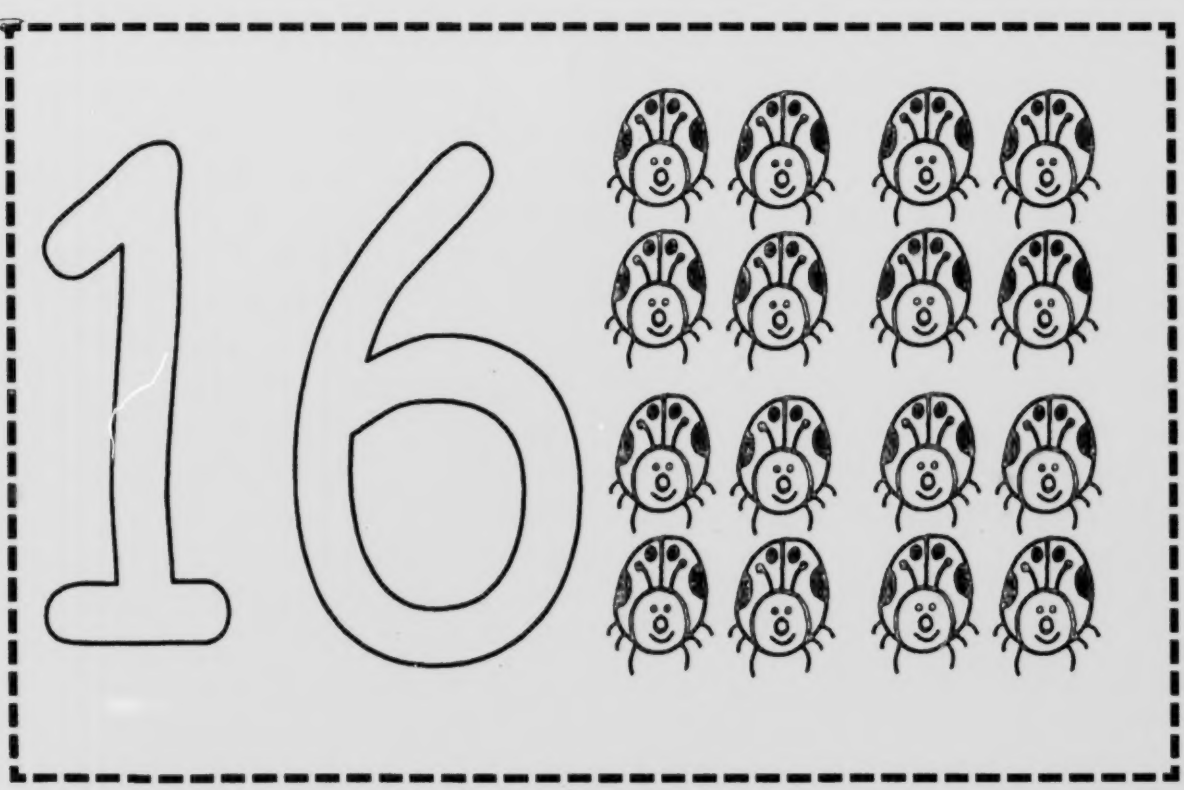

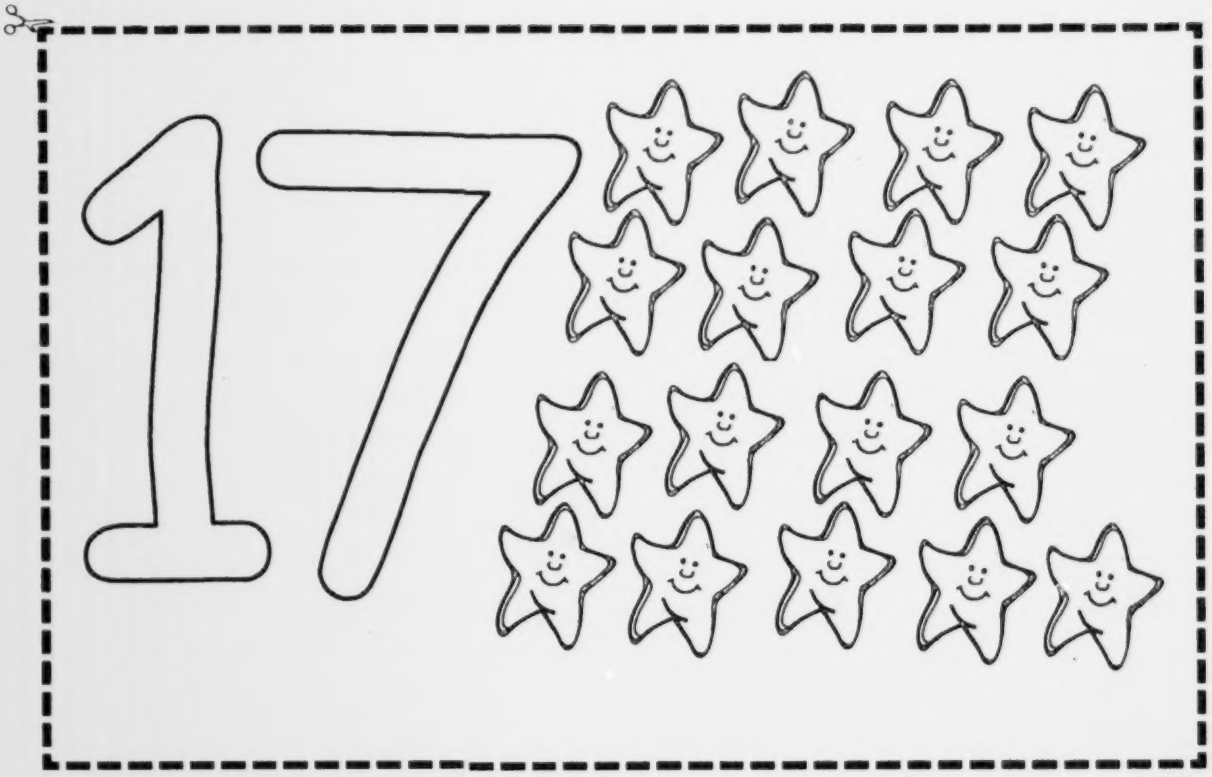
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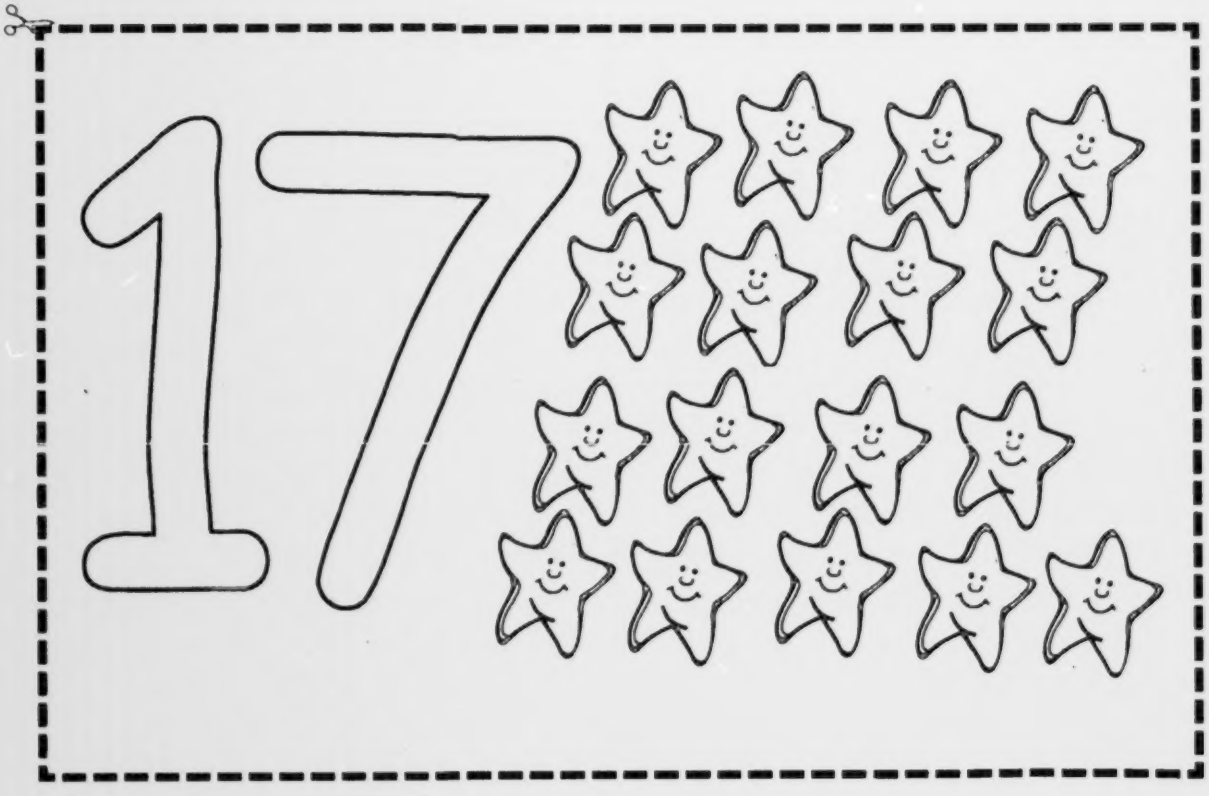
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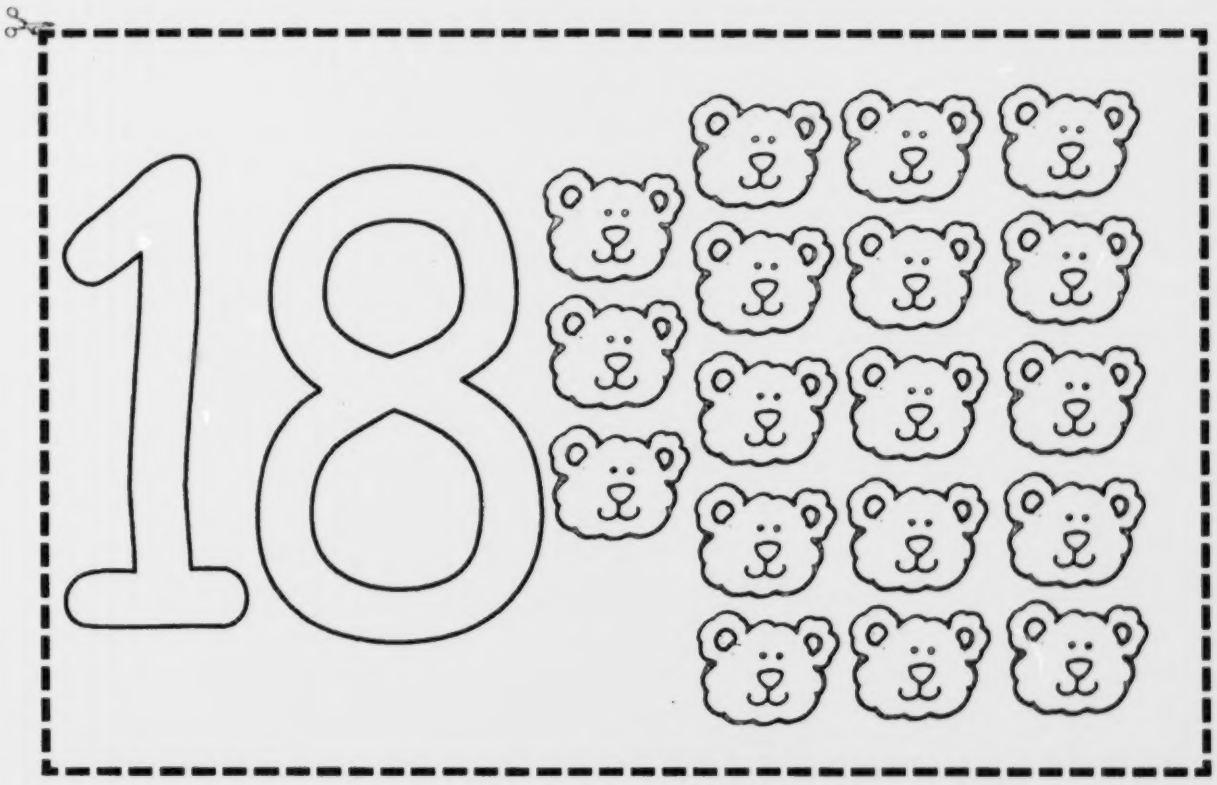
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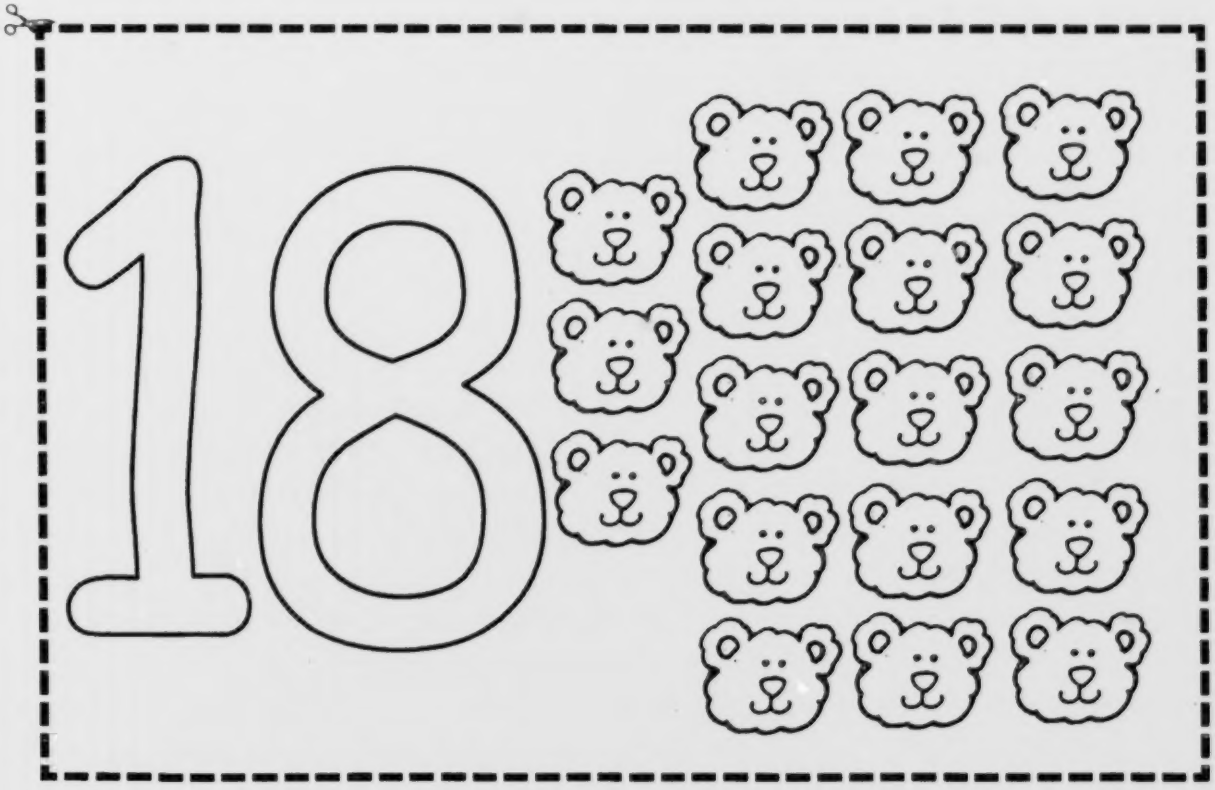
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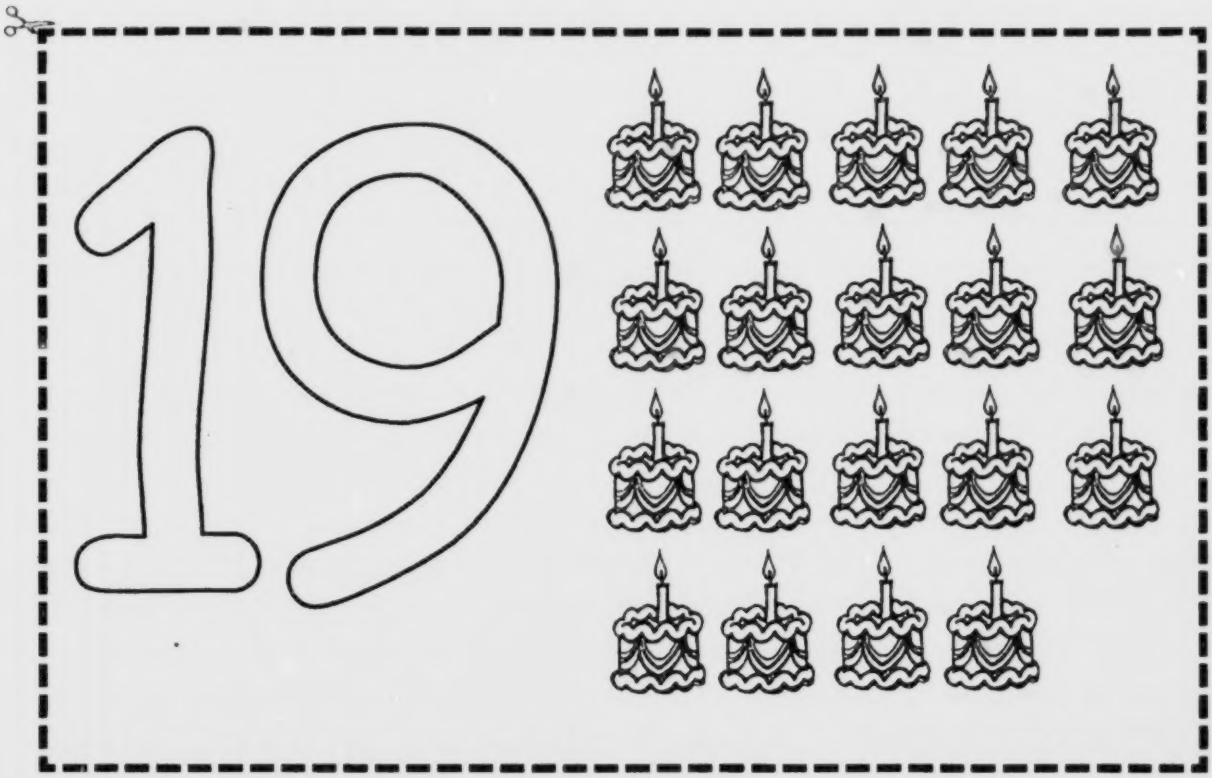
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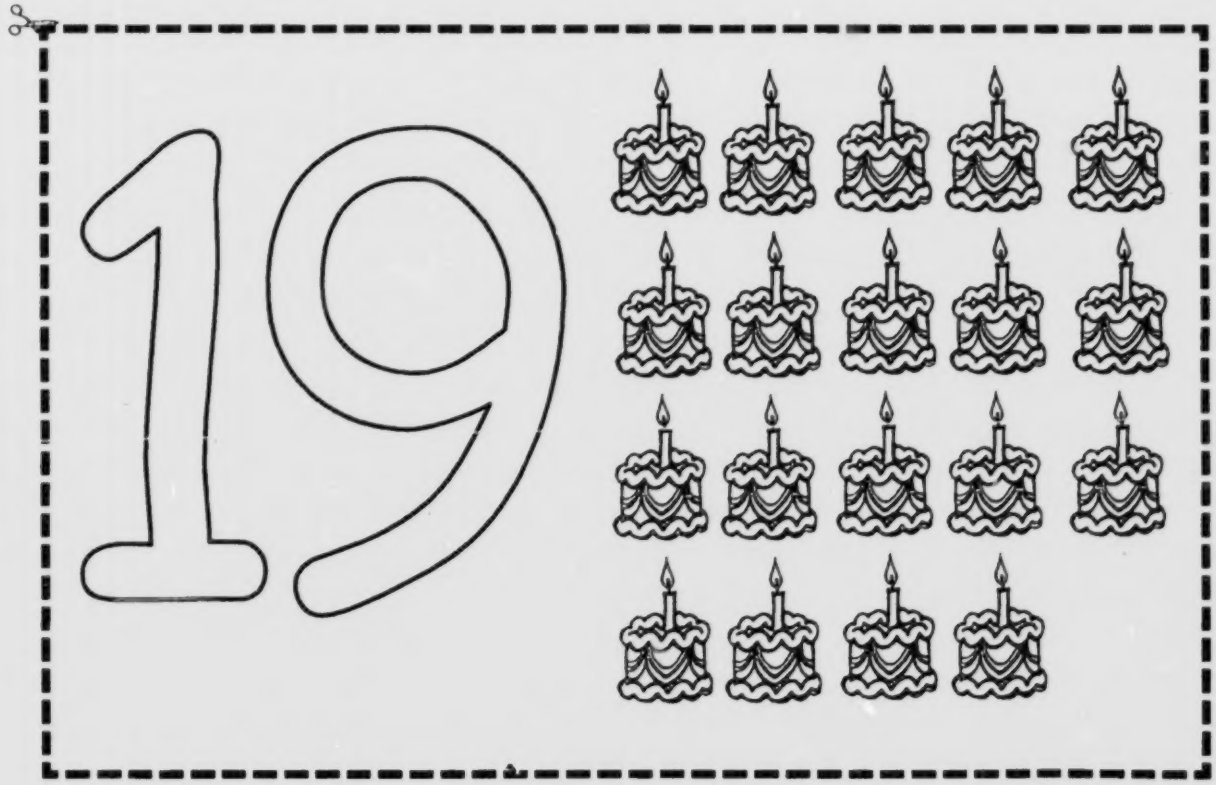
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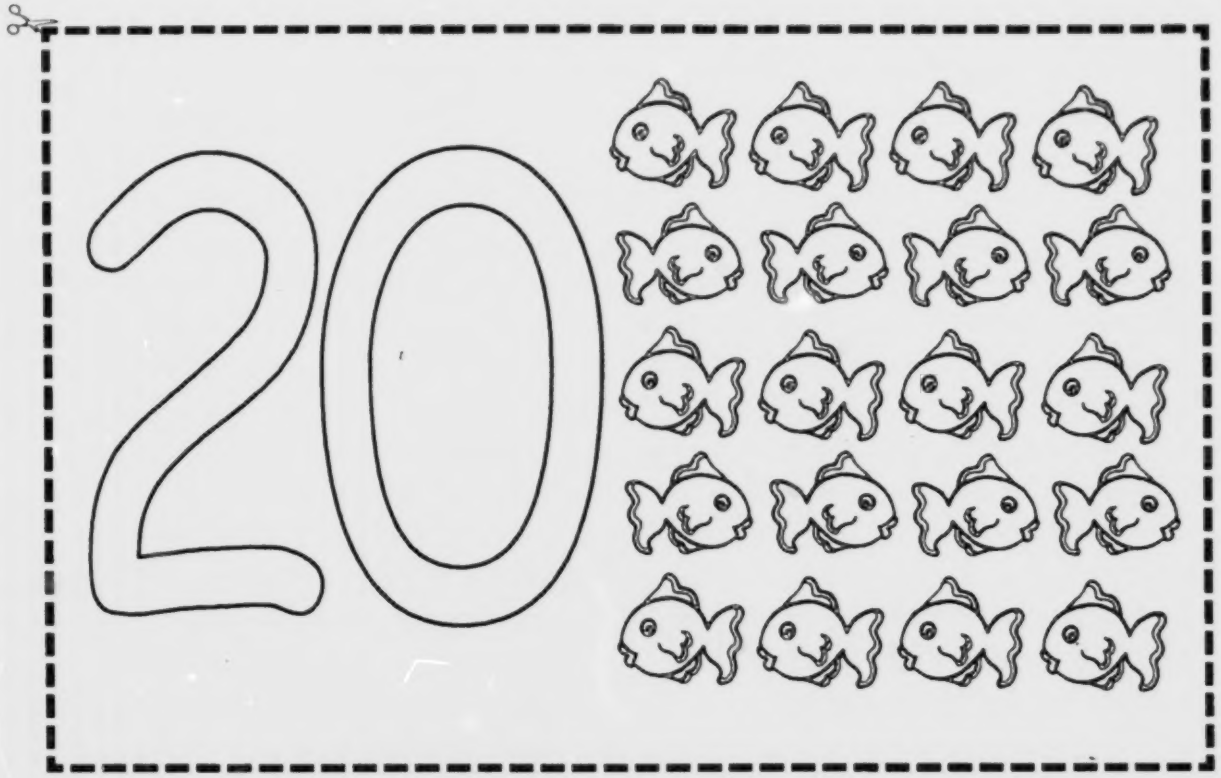
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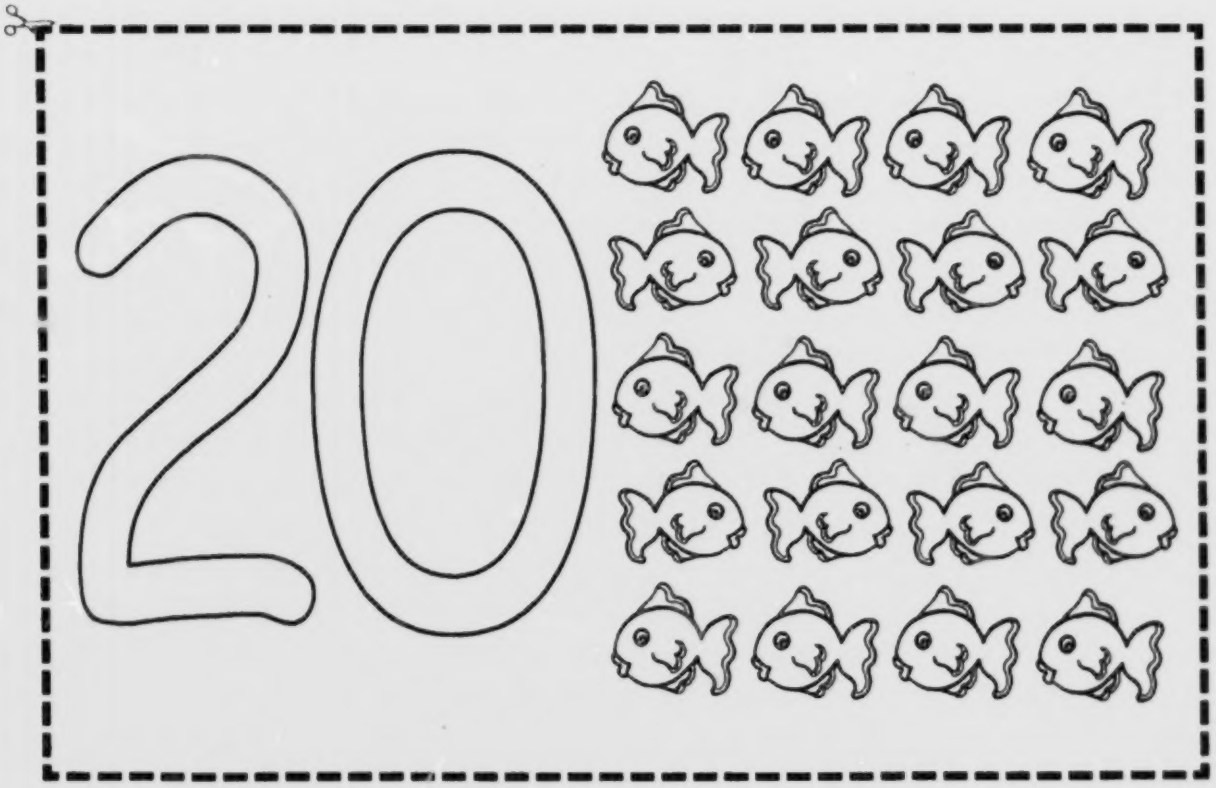
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Section 8

1 2 3 Build with Me: Extension Activities & Patterns

Once your students have developed basic math skills, you'll want to reinforce those skills and build on them. Here are some creative ways to work math concepts into daily school activities and encourage the children to learn while they're having fun.

Ordinal Position

1. **Ordinal numbers guessing game.** The leader arranges five cups in a row, next to the reproducible labels on page 146 for first through fifth positions. (Party supply stores often have wonderful selections of inexpensive colored plastic themed cups that are perfect for this game.) The first player hides his/her eyes while the leader places an eraser or other small object under one of the cups. Then the player guesses the eraser's location by saying something like, "I think it is hidden under the third cup." All students count together—"first, second, third"—as the leader points to the cups. Then the teacher lifts the cup the child guessed. If the player guessed correctly, he/she becomes the leader and chooses another player. If the player guessed incorrectly, he/she may make another guess. Either way, you begin the process all over again, continuing until the object has been found.

2. **Line up.** As you dismiss the students to line up or to leave the work area, be sure to give instructions using ordinal positions: "Barbara may line up first, John second, Trisha third," and so on.

3. **Ordinal position worksheet.** The reproducibles for work sheets on pages 147–49 are designed to further address the concept of ordinal position.

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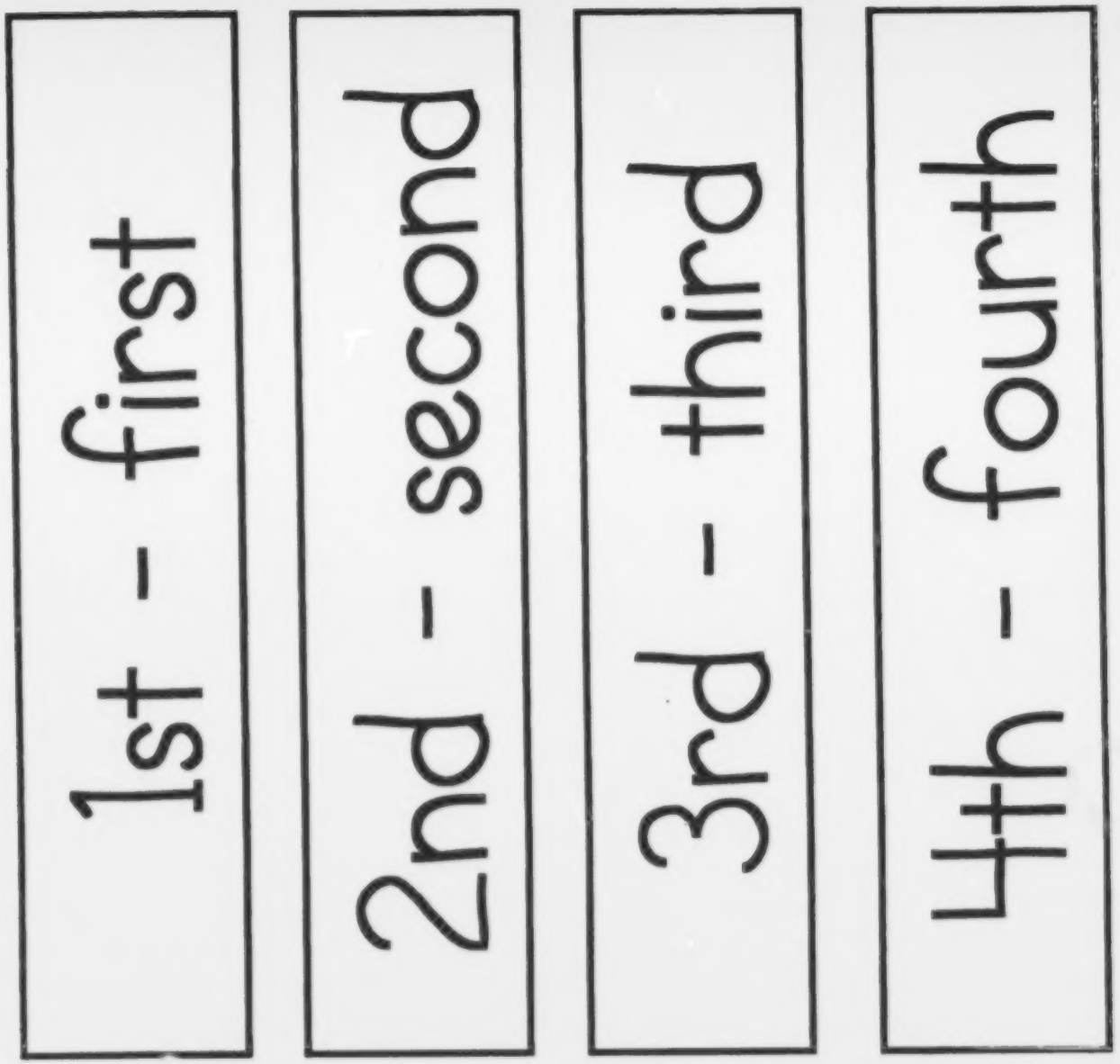
Ordinal Number Guessing Game

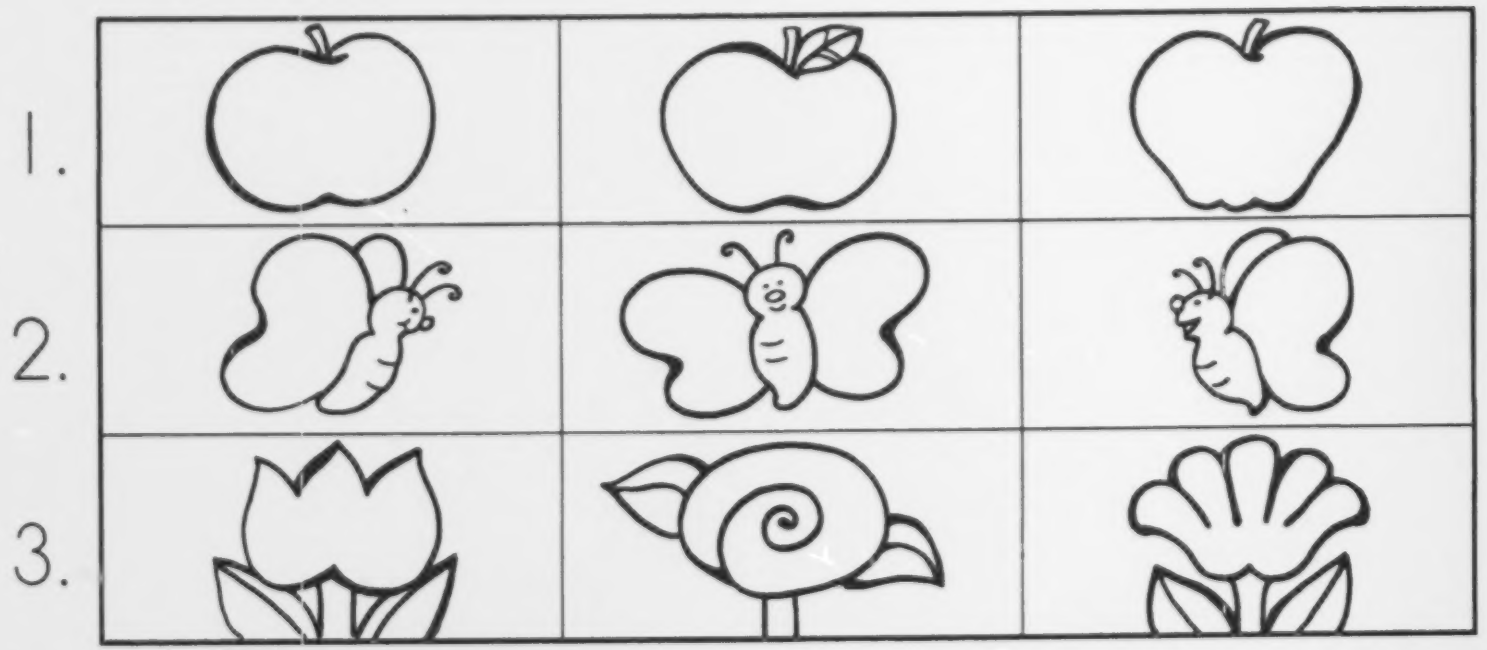


5th - fifth

Ordinal Position Work Sheet

Name: _____

First, Second, Third



1. Color the third apple red. Color the first apple yellow. Color the second apple green.

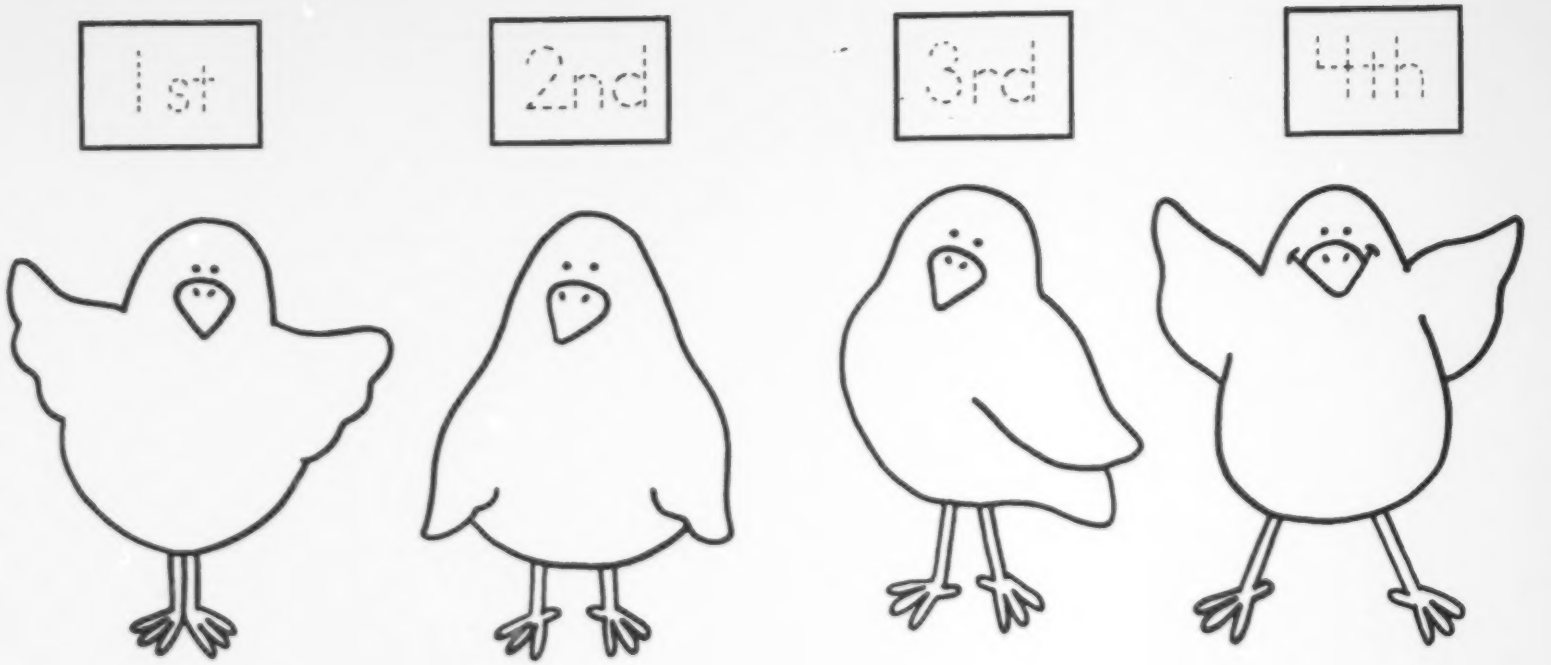
2. Color the first butterfly blue. Color the third butterfly orange. Color the second butterfly purple.

3. Color the second flower red. Color the first flower orange. Color the third flower yellow.

Ordinal Position Work Sheet

Name: _____

First, Second, Third, Fourth



1. Color the second bird yellow.
2. Color the fourth bird red.
3. Color the first bird purple.
4. Color the third bird blue.

First	Second	Third	Fourth
*	*	*	*

Touch tap the words as you read them.

Ordinal Position Work Sheet

Name: _____

First, Second, Third, Fourth, Fifth

1. Write the ordinal numbers in the boxes.
2. Color the second clown's hat red.
3. Draw blue buttons on the fourth clown.
4. Color the first clown's shoes yellow.
5. Draw orange hair on the third clown.
6. Color the fifth clown's suit green.

Money

1. **"Money in My Pocket."** Place two coins in your pocket and then say to the students, "I have two coins in my pocket. What could their sum be?" Write down the student predictions on the chalkboard. "If I have two pennies, then what would the sum be?" "If I have a penny and a nickel, what would the sum be?" Continue taking predictions until you have a good list, then remove the coins from your pocket. Write the addition sentence on the chalkboard. Who made the correct prediction? Now build on this game by trying the same thing with three coins.

2. **Class store.** Set up a store in your class's dramatic play area and provide plastic money that the children can use for store transactions. Be sure to have price tags for the shopping items. Either you or your students can make them, depending on student ability level.

3. **Class cash**. Photocopy the money patterns on page 151 and use this "class cash" to reward good behavior. At the end of the week, let students use their class cash to buy treats.

4. **Coin drop.** Fill a clear plastic cup with water. Drop pennies into the cup slowly, one at a time, instructing students to count the pennies as you add them: How many pennies can you drop into the cup before the water overflows? Write down student predictions before you begin and compare those with the end result.

5. **Money patterns.** Patterns are available in most educational font packages or programs. You can share these with your students in a variety of ways:

   - Look at each coin or bill, and discuss its characteristics.
   - Use the coins and bills as manipulatives when solving money equations. These can be addition or subtraction sentences.
   - Work with them to demonstrate like amounts. Fifteen pennies can also be represented as 1 dime and 1 nickel, for example.
   - Use them in your class store.

Reproducible coin patterns

142

Class
$1
Cash
one

Class
$1
Cash
one

Class
$5
Cash
five

Class
$5
Cash
five

Class
$10
Cash
ten

Class
$10
Cash
ten

Skip Counting

1. **Number line.** When making a classroom number line, write all the even numbers in one color and all the odd numbers in another. This makes skip counting by twos easier for the children to see and do. To help the children in counting by fives and tens, place a circle around each number that is a multiple of five and a star next to every one that is a multiple of ten.

2. **Skip counting game.** The students start counting by ones. When you clap your hands, they begin counting by twos; when you clap your hands again, they go back to counting by ones. The process might go like this: "1 - 2 - 3 - 4." (Clap) "6 - 8 - 10 - 12 - 14." (Clap) "15 - 16 - 17," and so on. Then try the same approach when counting by fives and tens.

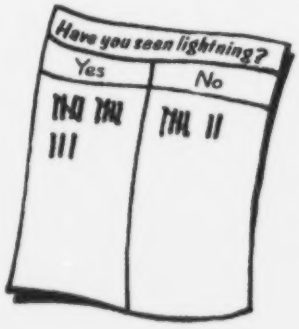
3. **Skip counting work sheets.** Use the work sheets on pages 153–54 to extend practice.

Tally

1. **Tally frames.** Using the frames on pages 155–64, tally the days of the month. Think of other things you could tally together as a class and try to tally some of those ideas. Try tallying cloudy or sunny days, for example, or the number of boys and girls in the class.

2. **Attendance tally.** Using the pattern on page 165, make a tally mark on each day when all students are present. Have a celebration when you reach 100 days of perfect attendance.

3. **Tally of student experiences.** You might ask, for example, "Have you seen lightning?" then tally the students' answers.



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Skip Counting Work Sheet

0 2 4

6 8 10

12 14

16 18

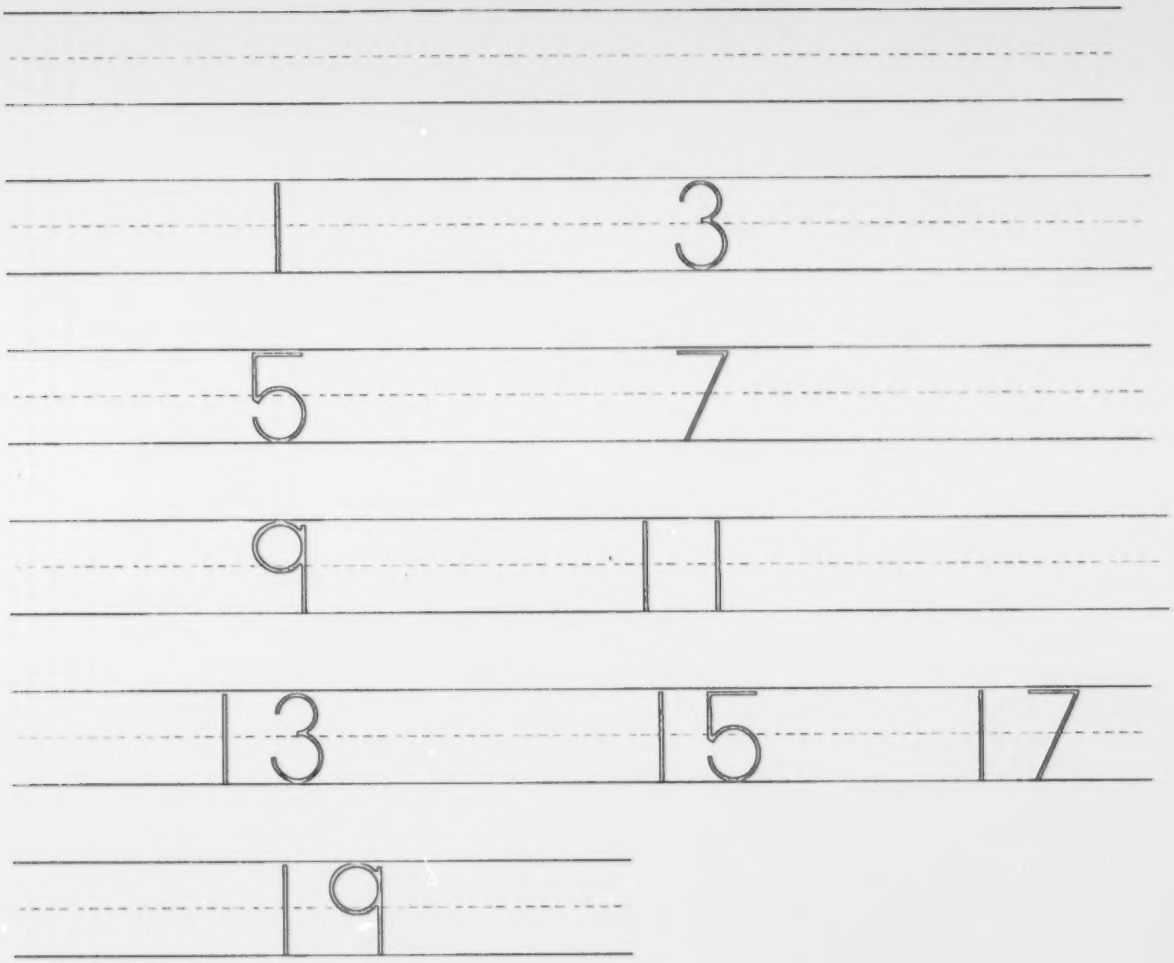
20

Trace and fill in the missing numbers.

0 1 2 3 4 5 6 7 8 9 10

11 12 13 14 15 16 17 18 19 20

Skip Counting Work Sheet

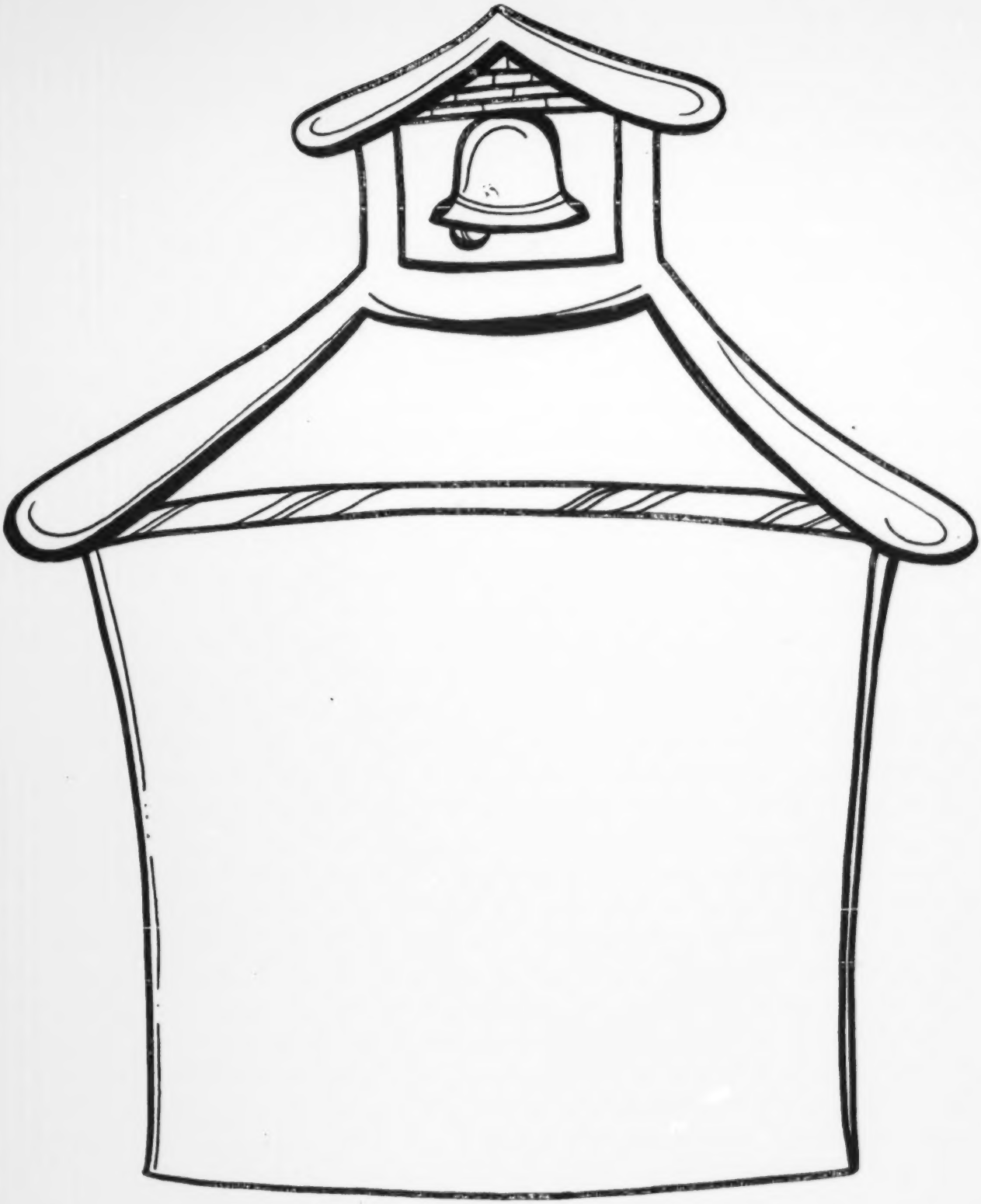


Trace and fill in the missing numbers.

0 1 2 3 4 5 6 7 8 9 10

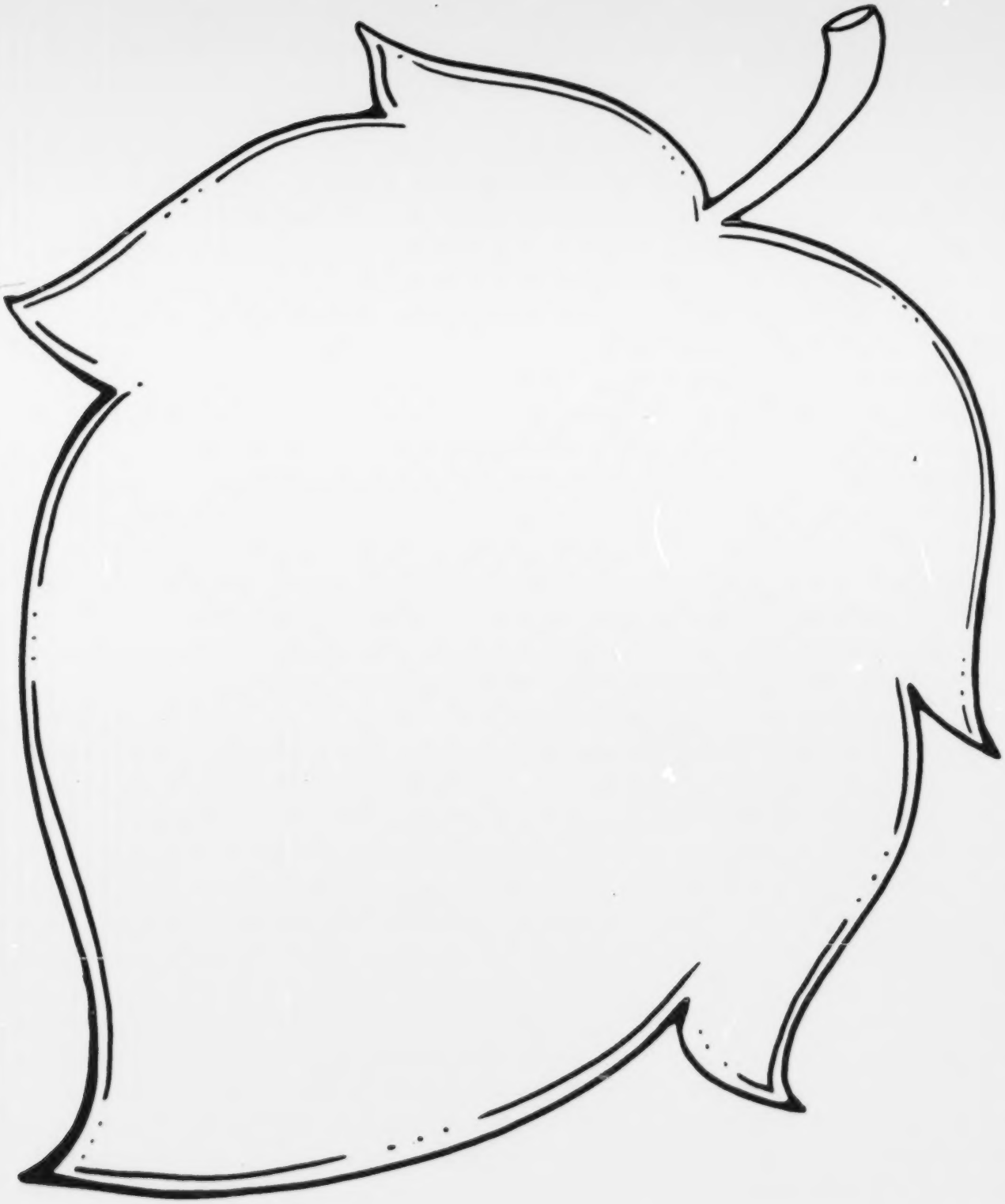
11 12 13 14 15 16 17 18 19 20

Tally Frame



Tally Frame

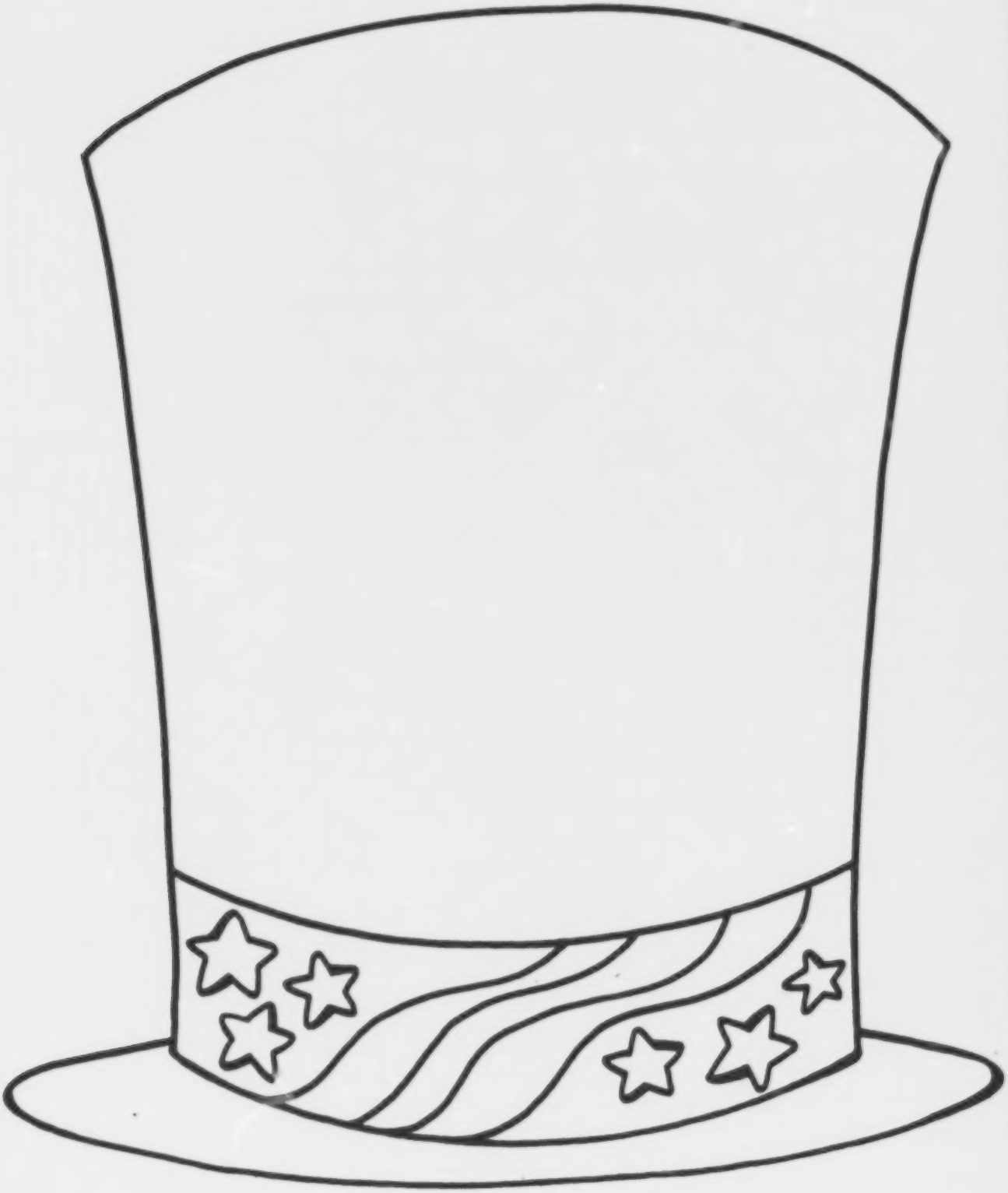
Tally Frame



Tally Frame

Tally Frame

Tally Frame



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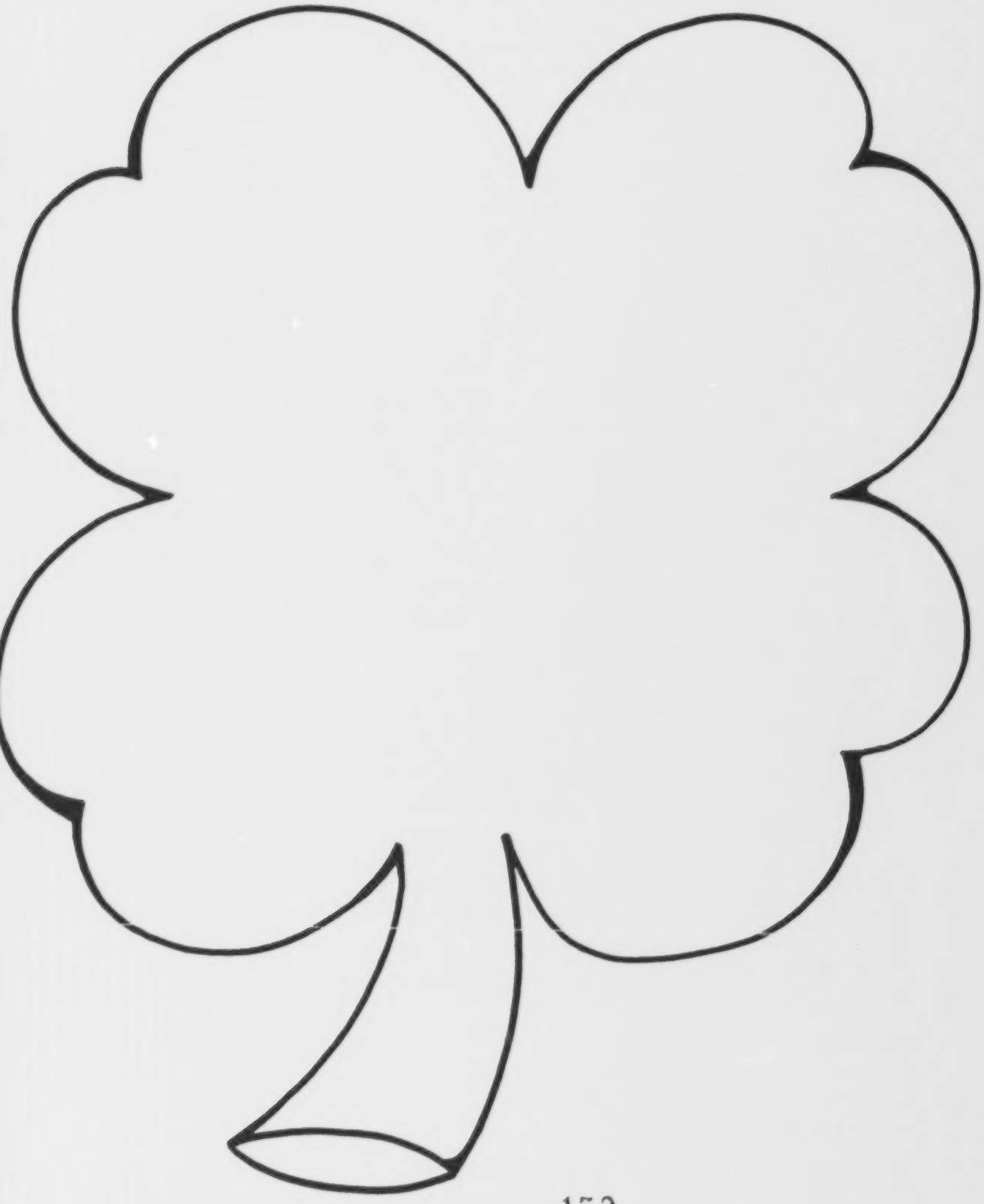
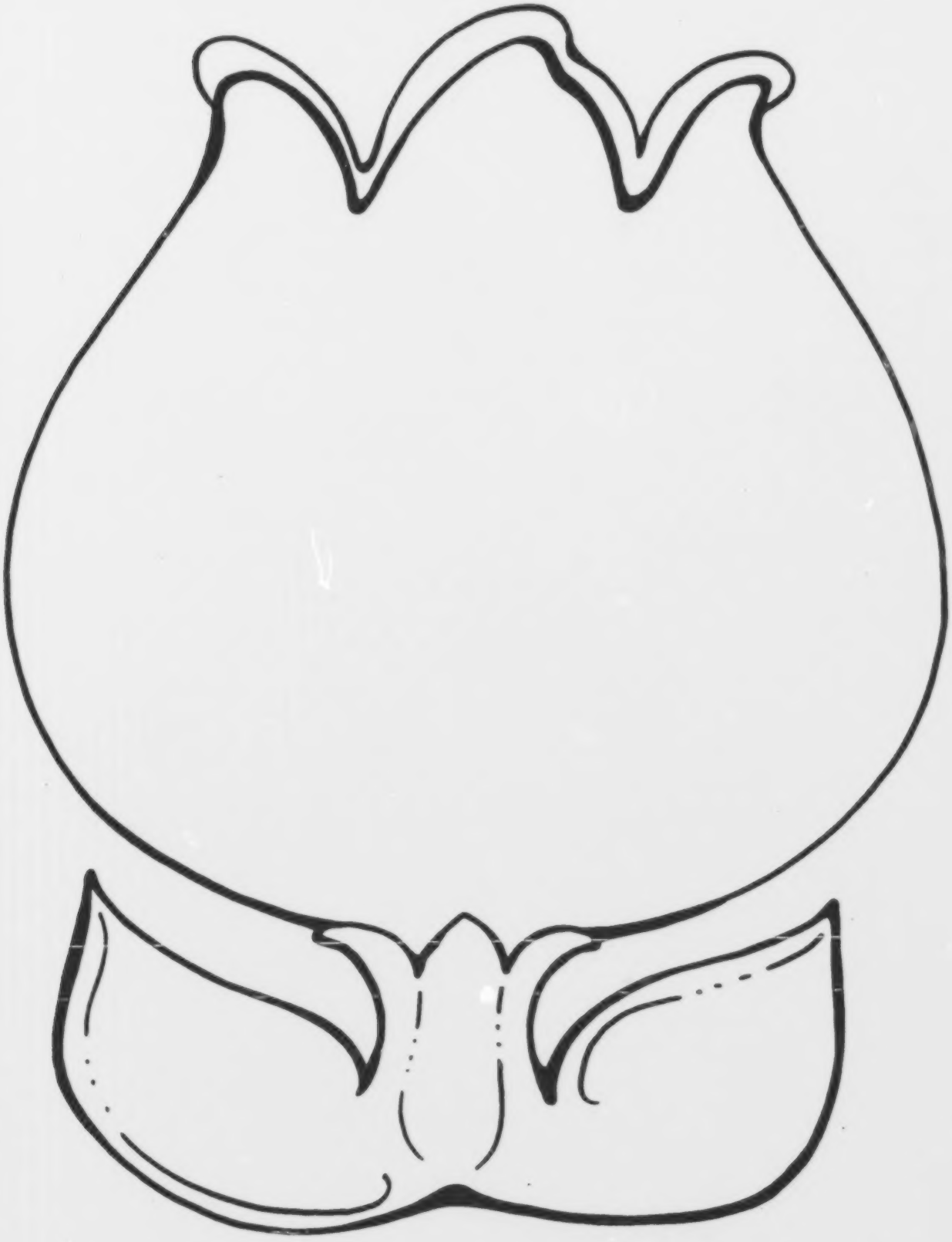


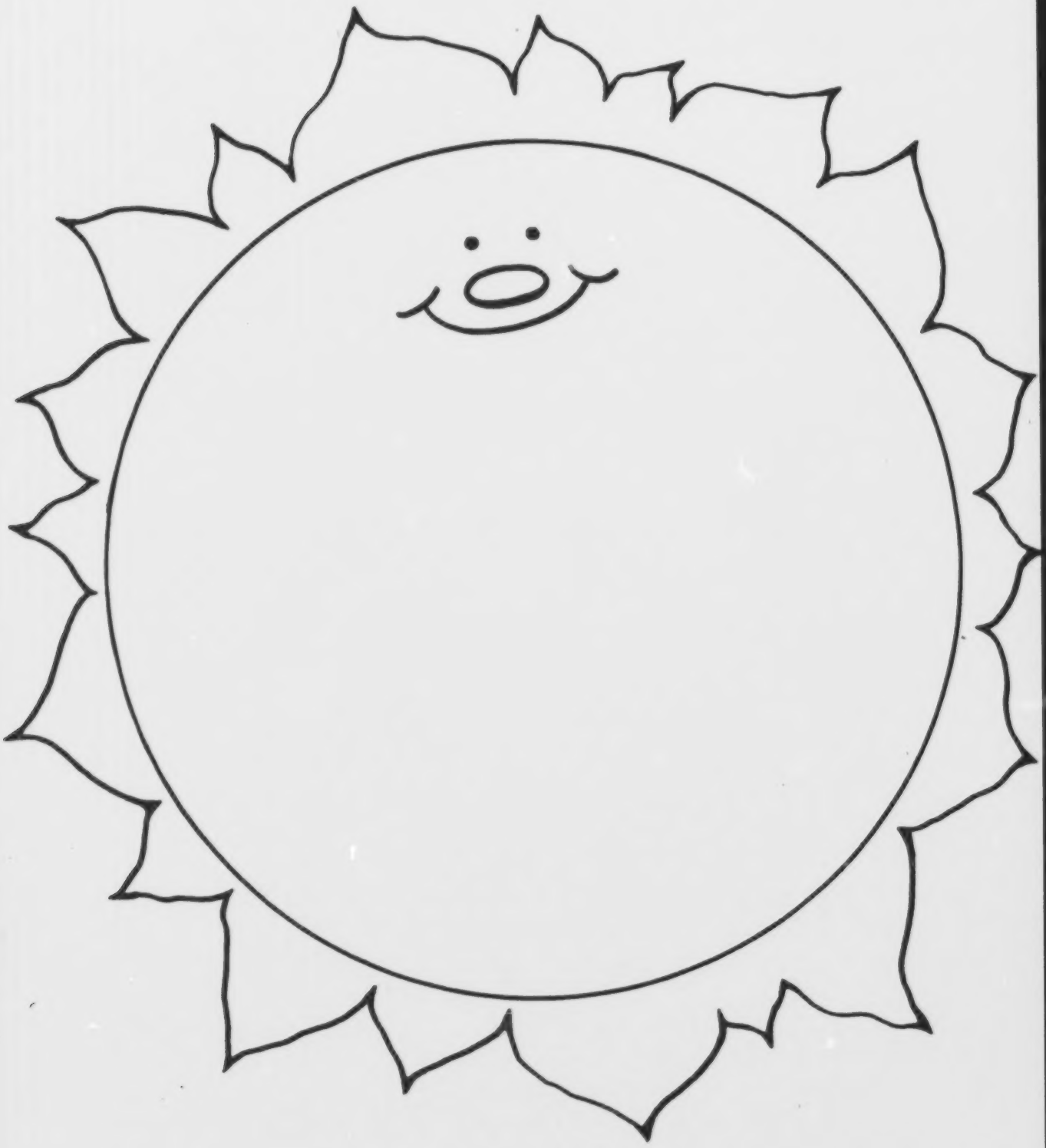
153

Tally Frame

Tally Frame



Tally Frame



Attendance Tally

We Are All Here Today

Calendar Bulletin Board

1. **Introduction.** Use pages 167–76 on your calendar bulletin board. During calendar activity time, say something like this: "Let's look at the name of the month together. How many letters do you see? Let's count them together. What are the names of the letters? Wonderful! Now let's try to blend the sounds of the letters together. What is the name of the month? You're right! Let's say that together. Now let's say it again and clap the syllables as we say it. How many syllables did you hear?"

2. **Dates.** When you create the calendar, try writing each number on a different-colored sheet of paper—or on die cuts—to create a pattern each month. Then ask questions such as, "What do the numbers in the boxes tell us? That's right! They tell us the date. How many days are in this month? What day does the first fall on? What is the date on the last day of the month? What is today's date?"

3. **Days of the week.** When practicing days of the week, use the word cards on pages 174–75. Ask some of the following questions: "How many days are in one week? Which is the first day of the week? Second? Third? What two days fall on the weekend? What day is it today? Can you point to that day on the calendar?" You may want to sing your favorite "Days of the Week" song to help reinforce this concept, or use one of the songs provided here instead.

4. **Yesterday, today, and tomorrow.** Using the flash cards on page 176, match the words with the appropriate days of the week: "Yesterday was Sunday. Today is Monday. Tomorrow will be Tuesday."

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September

October

November

December

January

February

March

April

May

June

July

August

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

lunes

martes

Flash Cards

miercoles

jueves

viernes

sabado

domingo

Flash Cards

Yesterday

Today

Tomorrow

Calendar Songs

Days of the Week

Sung to the tune of "Oh My Darling Clementine"
There are seven days
There are seven days
There are seven days in one week

Sunday, Monday
Tuesday, Wednesday
Thursday, Friday, Saturday

Months of the Year

Sung to the tune of "Ten Little Indians"
January, February, March, and April
May, June, July, August, and September
October, November, and December
These are the 12 months of the year

Date Song

Sung to the tune of "Frère Jacques"
(Teacher sings) Today is Monday
(Children repeat) Today is Monday
September 1st
September 1st
2003
2003
This is the date
This is the date

Calendar Tools You Can Make

1. **Student calendars.** Use the calendar pattern on page 178 to create individual calendars for the students. These are wonderful for practicing calendar concepts in small groups. Then you can send the calendars home for even more practice.

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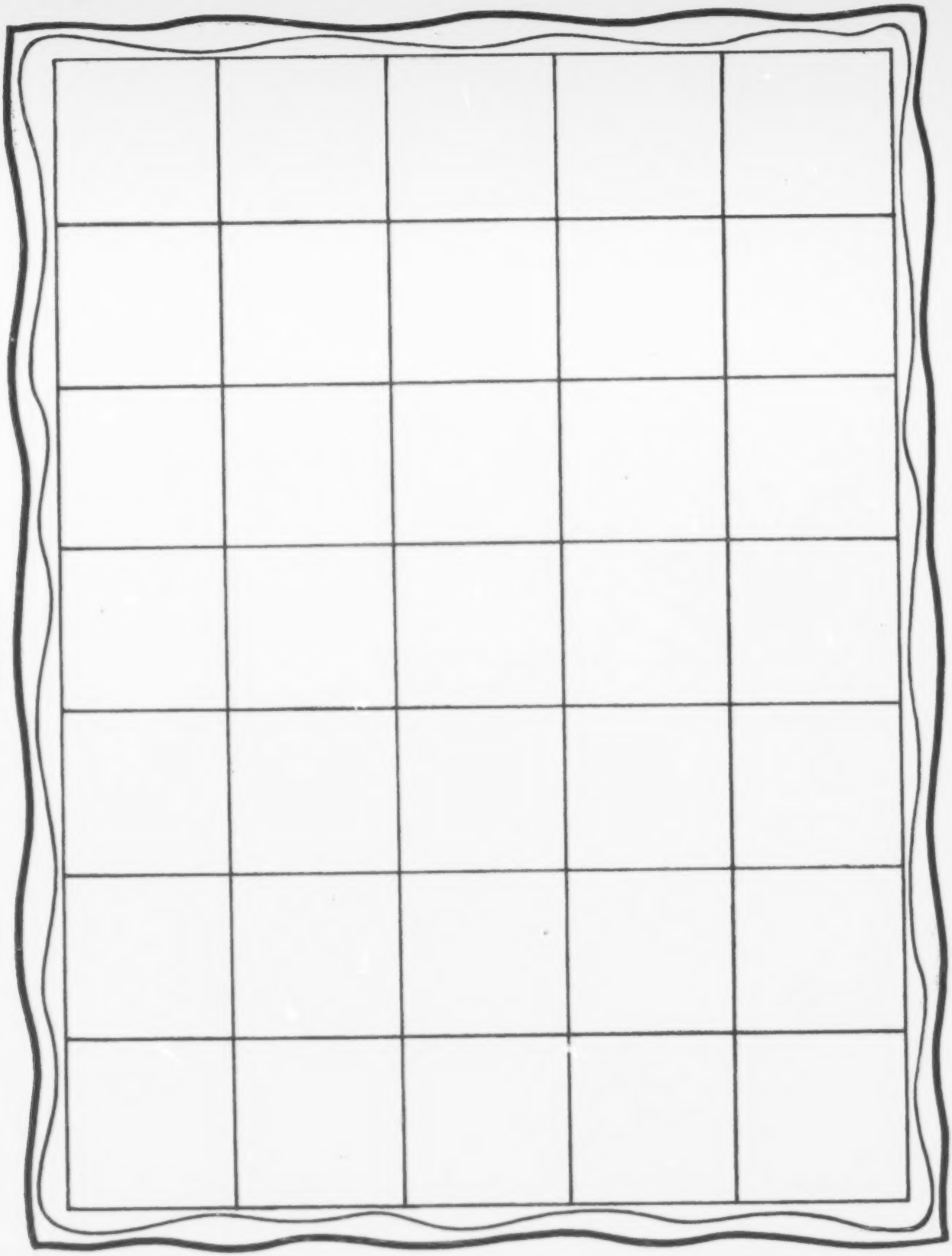
Student Calendar



Patterns

1. **"Guess My Pattern."** Ask a group of students to come up to the front of the class and stand in line according to a pattern you have made. Your pattern might be boy-girl-boy-girl, or blond-brunette-blond-brunette, or something a little more difficult, like sneaker-sneaker-sandal-sneaker-sneaker-sandal. Ask the students to guess your pattern.

2. **Auditory patterns.** Create and extend auditory patterns with your students. Lead them in a pattern such as clap-clap-clap-snap-clap-clap-clap-snap. Then encourage them to come up with sound patterns of their own.

3. **Pattern work sheets.** Use the reproducibles on pages 180–82 to further extend the concept of pattern.

Estimation

1. **Estimation jar.** Each month, fill a large jar with thematic items and ask the students to estimate the number of items in the jar. At the end of the month, count the objects together and see who made the best estimate. Appropriate countable objects might include pencils in September, candy in October, nuts in November, red and green peppermints in December, cotton balls in January, conversation hearts in February, gold coins in March, marshmallow chicks in April, seeds in May, plastic insects in June, tiny flags in July, and seashells in August.

2. **Estimation chart.** Use the 100 Chart on page 183 as an estimation graph. Laminate the chart. Provide an object for estimation. This could be a particular number of objects in a jar, objects to be measured, or objects to be weighed. Ask an estimation question such as "How many pounds do you, Tommie and Jerry, weigh together?" Have students write their names next to a number on the 100 Chart, using a dry-erase marker or small Post-it notes. Place Tommie, then Jerry, on the scale and add their weights together. Look at the 100 Chart and see who in the class made the best estimate. You might also try using a common object to create a measurement estimation question: "How many erasers long is our chalkboard?" Again, have students place their estimates on the 100 Chart. Who made the best estimate?

3. **Estimation work sheets**. Copy the work sheets found on pages 184–85. Following the instructions on each work sheet, have students record their estimates, then measure or count the answer and see how close they came.

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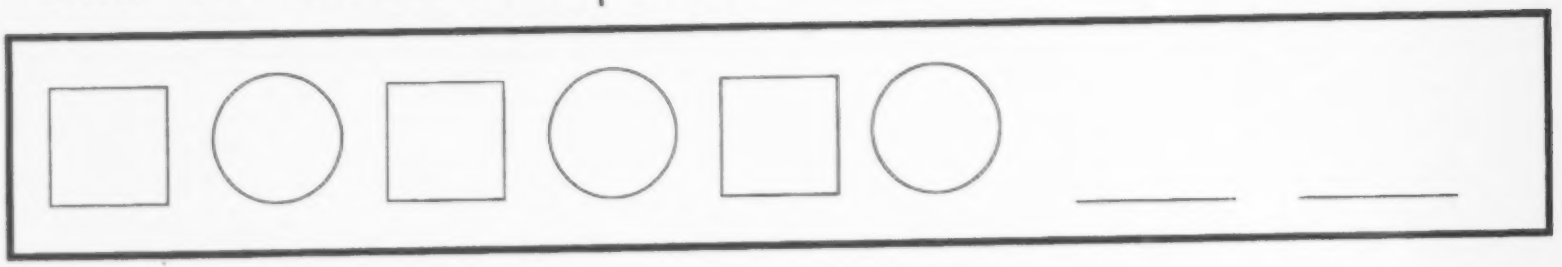
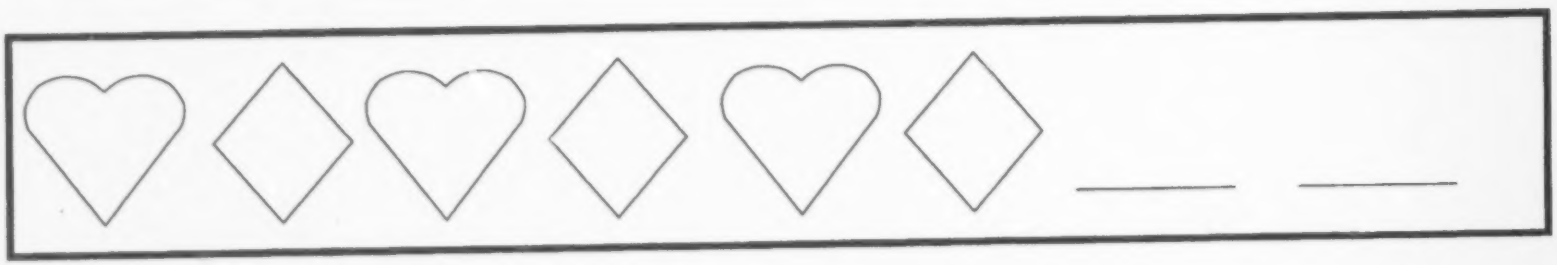
Pattern Work Sheet

Name:

Color and extend each pattern.





a b a b a b a b a b a b a b a b

Pattern Work Sheet

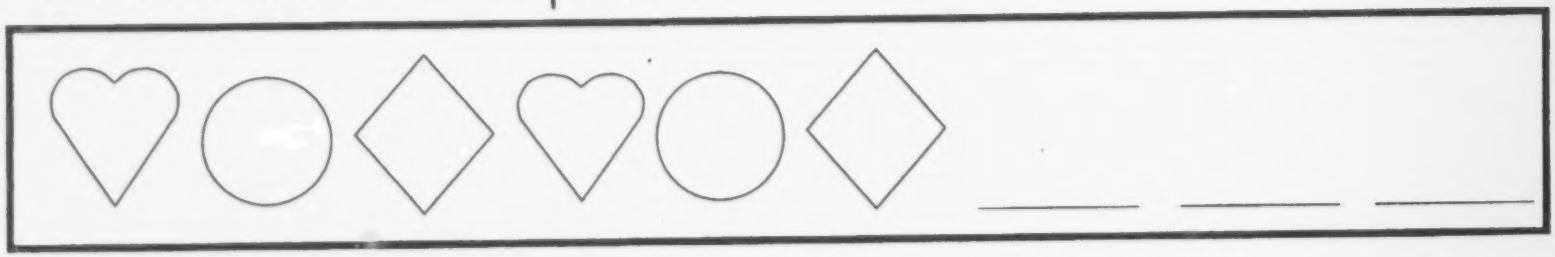
Name: _____

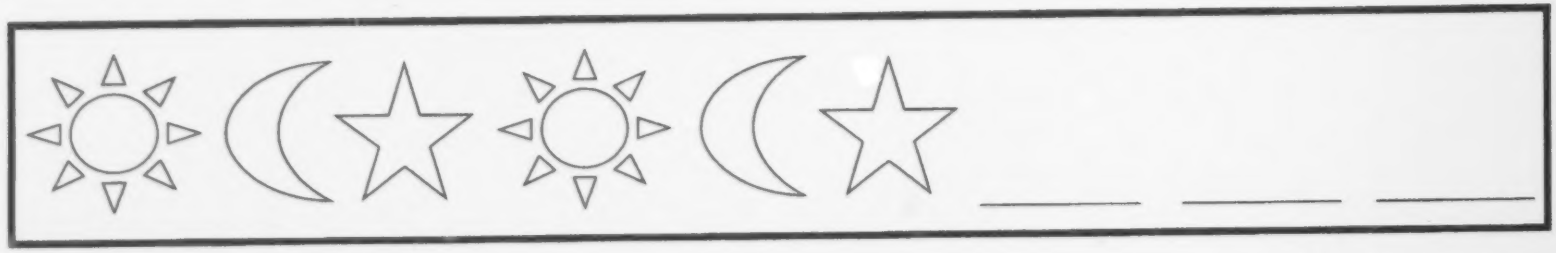
Color and extend each pattern.

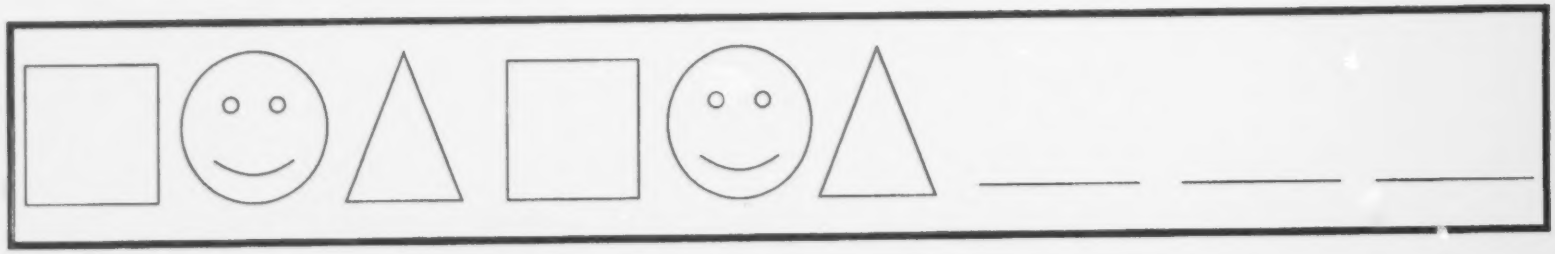
Pattern Work Sheet

Name: _____

Color and extend each pattern.







a b c a b c a b c a b c

100 Chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

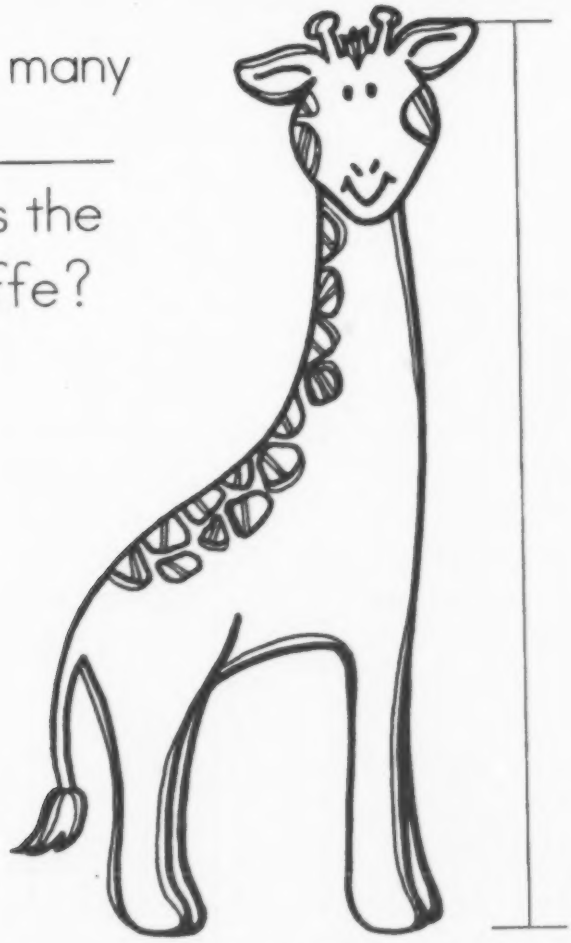
Estimate Work Sheet

Use Cheerios, beans, cubes, or any other item to measure the animals.

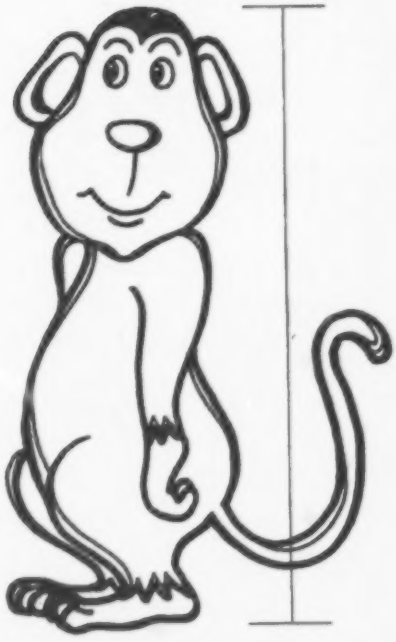
Name: _____

I can estimate!

How many _____ tall is the giraffe?



How many _____ tall is the monkey?



My Estimate	My Measurement	My Estimate	My Measurement

Estimate Work Sheet

Name:

Estimate how many sunflower seeds you think it will take to fill the center of the sunflower. Write your estimate on the line. Glue sunflower seeds onto the center of the sunflower. Count how many sunflower seeds it took to fill the sunflower. Write the number on the line.

This is how many I estimated _____

This is how many I counted _____

Fractions

Flash cards. Use the flash cards and patterns provided on pages 187–92 to practice fractions.

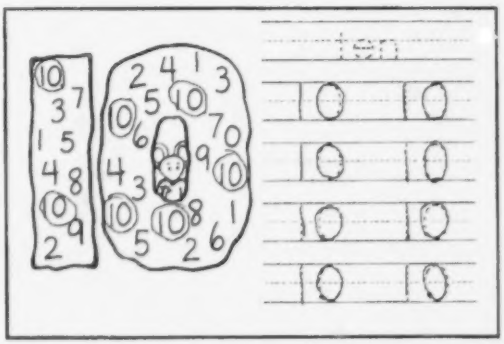
Number Fun

1. **Bingo.** Purchase or make a bingo game. Try playing the game a different way each time. For one round, the winner is the child who covers four corners of his/her bingo card; for another round, the winner is the child who covers squares in a horizontal line, a vertical line, or a diagonal line. For the grand finale, the player who gets a blackout (all numbers covered) wins.

2. **Creative play.** Let the students create numbers using Play-Doh, or trace them in a tray of shaving cream.

3. **Number search.** Use the patterns on pages 193–203 for numeral recognition and printing practice. Have each student find the focus number in the number search and circle it. Then have each student trace the dotted numbers for additional practice.

4. **Number worksheet**. Using the worksheet on page 204, have students trace the names and numerals; then ask them to match the appropriate word, numeral, and picture combinations.



Time

1. **Human clock.** Make 12 cards, each with a numeral between 1 and 12. Have 12 students stand in a big circle to represent a clock face, with each holding one of these number cards. Have two students stand in the center of the circle, one holding a yardstick for the minute hand and the other a ruler for the hour hand. Call out specific times to the hour or the half-hour, and have the students in the center show the time. The students that are remaining can say "tick-tock, tick-tock" as their classmates show the time and "bong" when their classmates mark the hour.

2. **Student clock.** Use the clock pattern on page 205 to let every student create his/her own clock. Call out specific times and let the students practice moving the clock hands appropriately.

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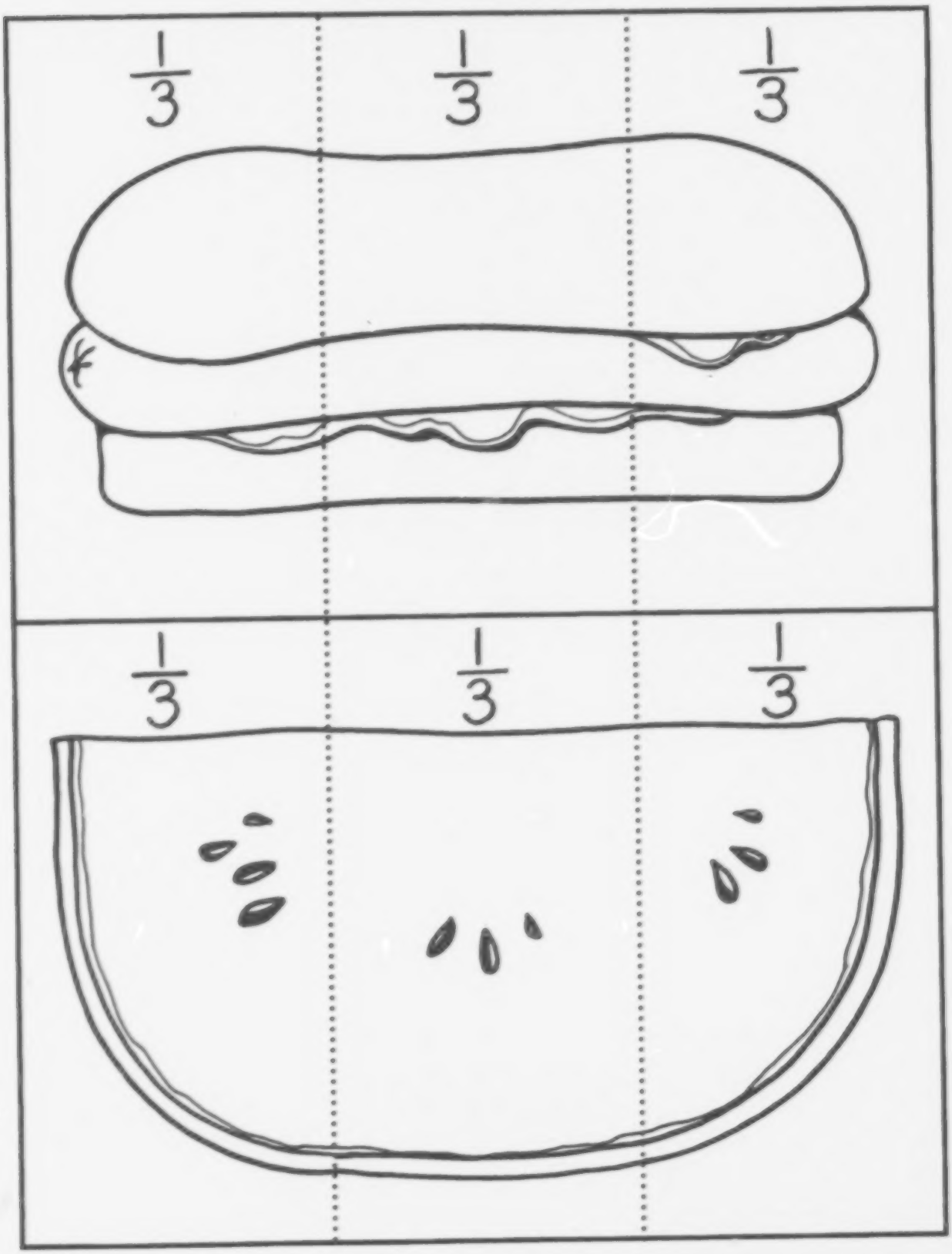
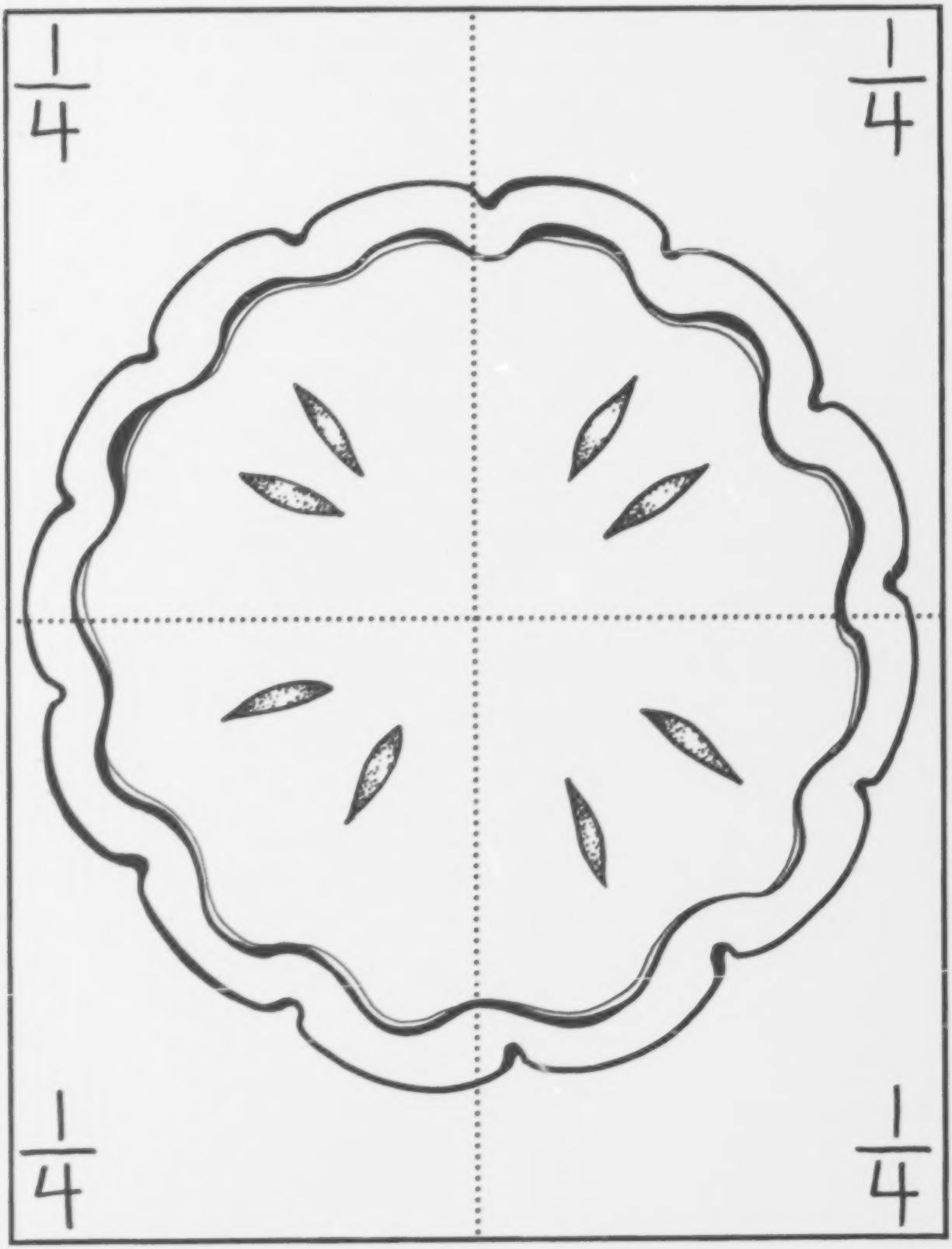
Flash Cards

$\frac{1}{2}$	$\frac{1}{3}$
$\frac{1}{8}$	$\frac{1}{4}$

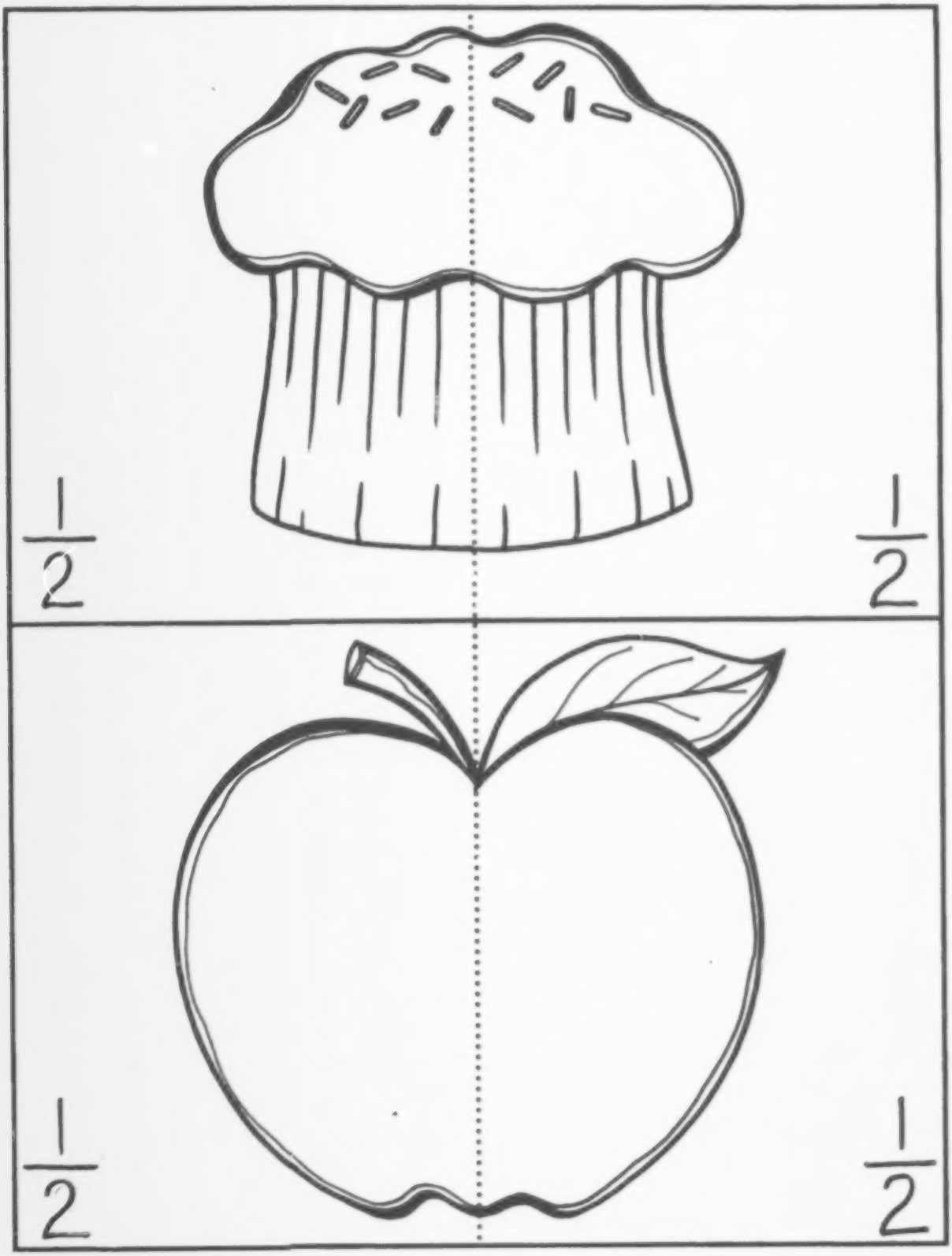
Fraction Patterns



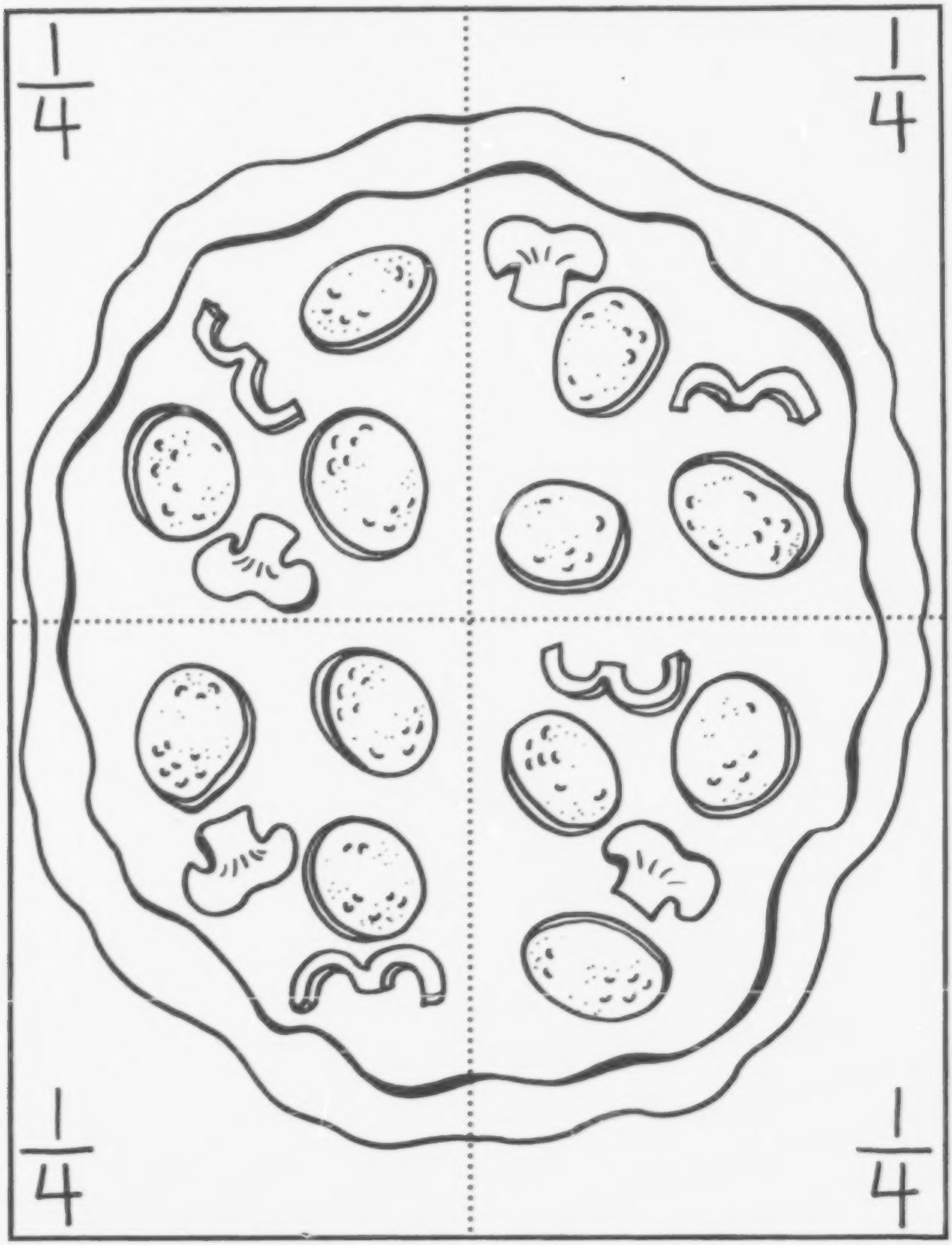
Fraction Patterns



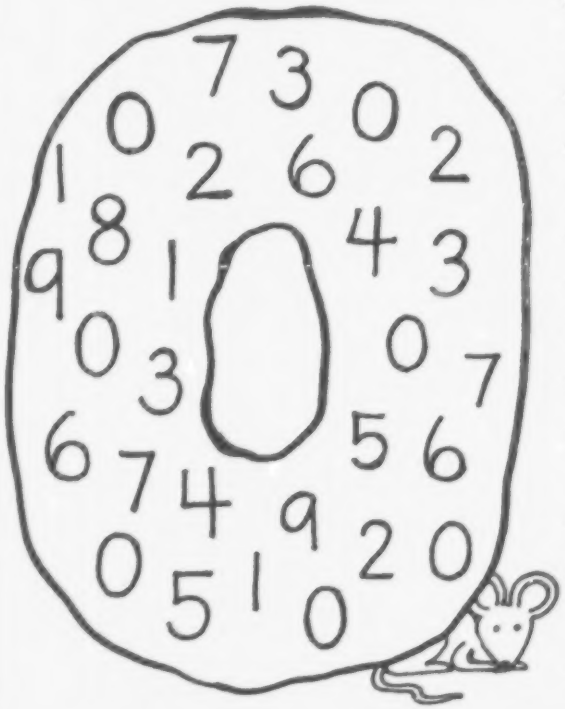
Fraction Patterns



Fraction Patterns



one whole



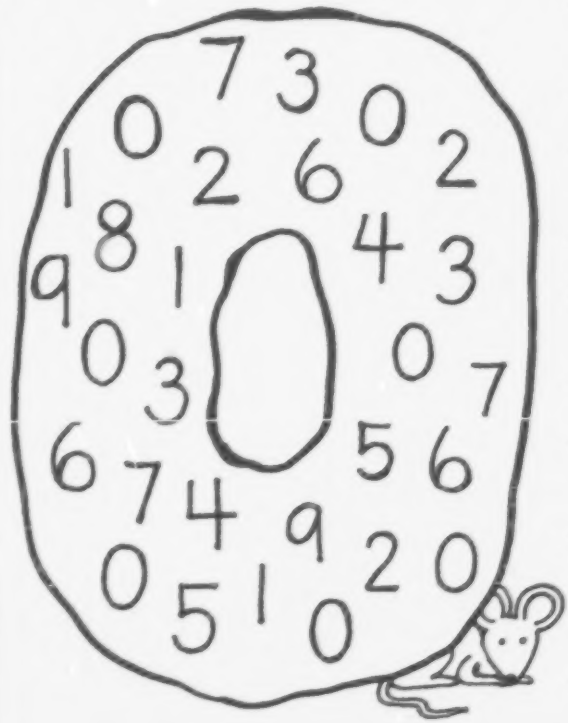
zero

0 0 0

0 0 0

0 0 0

0 0 0



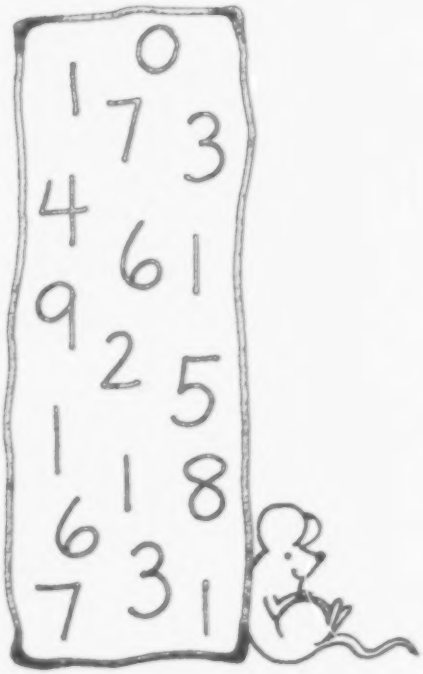
zero

0 0 0

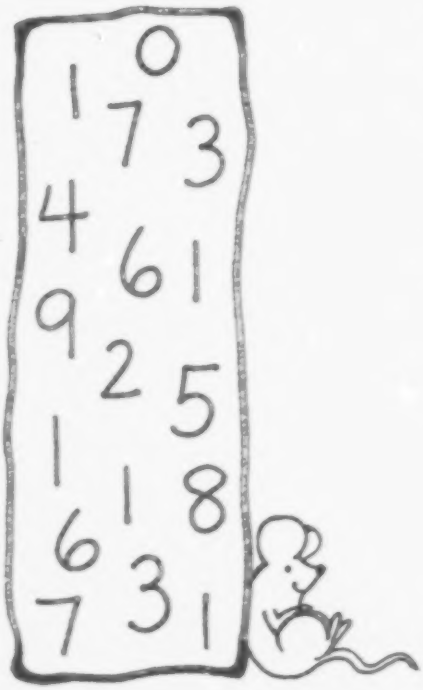
0 0 0

0 0 0

0 0 0



one



one

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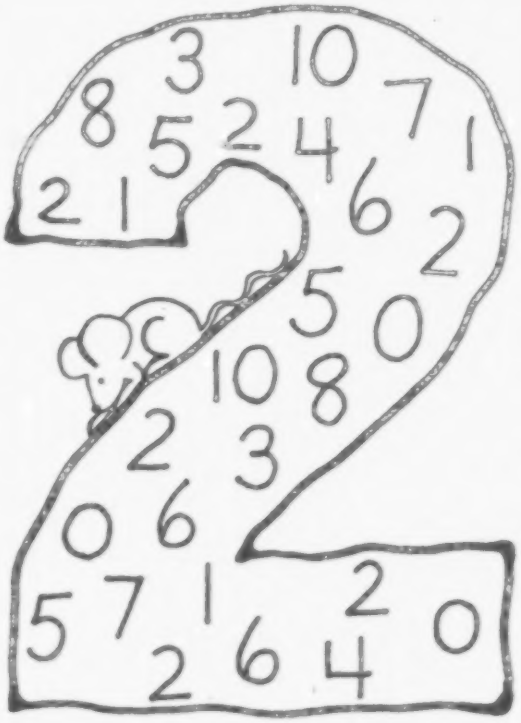
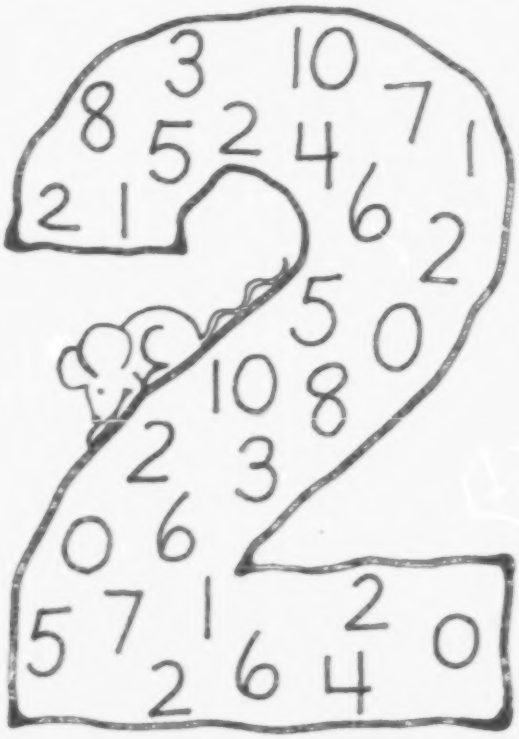


two



two

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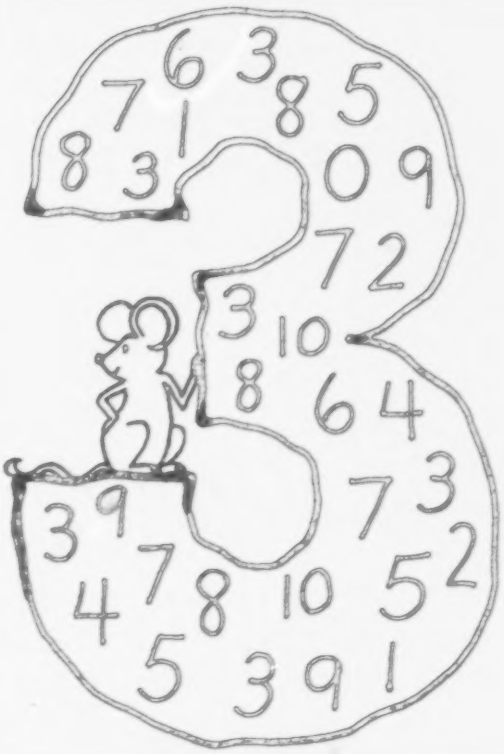


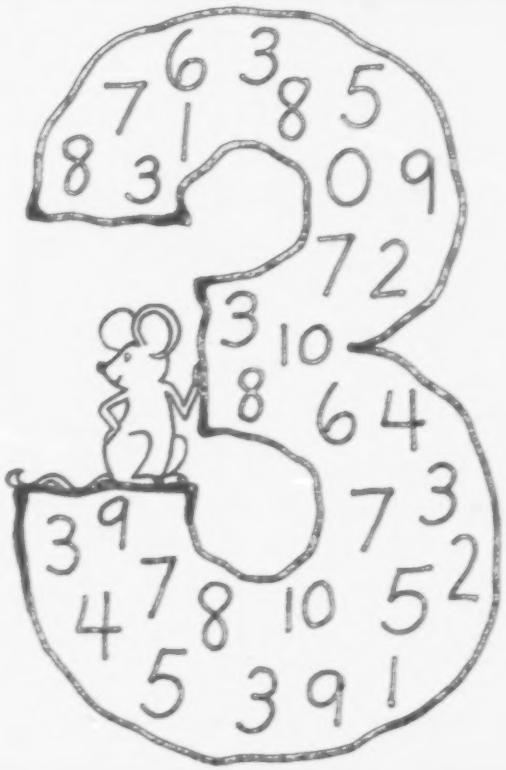
three

3 3 3

3 3 3

3 3 3

3 3 3



three

3 3 3

3 3 3

3 3 3

3 3 3

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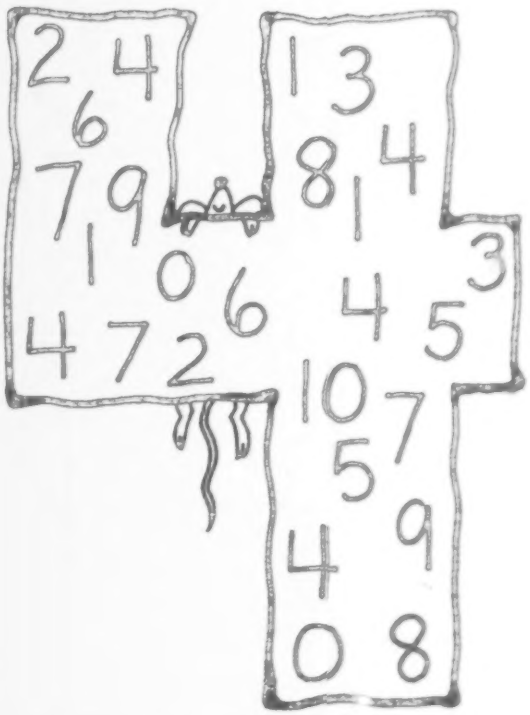
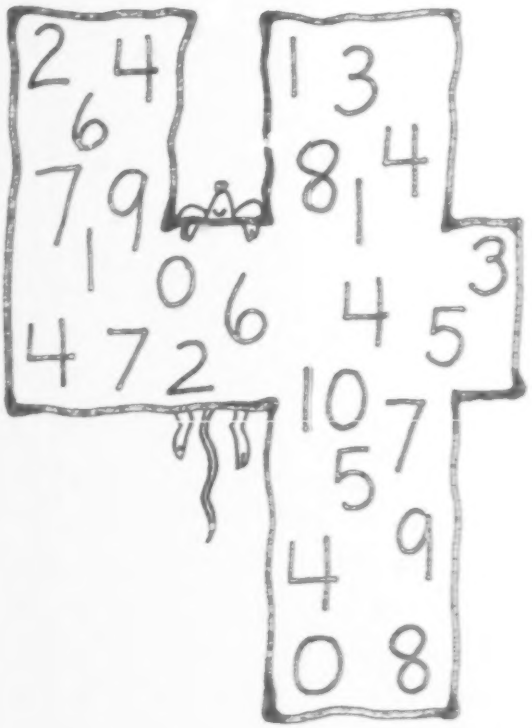
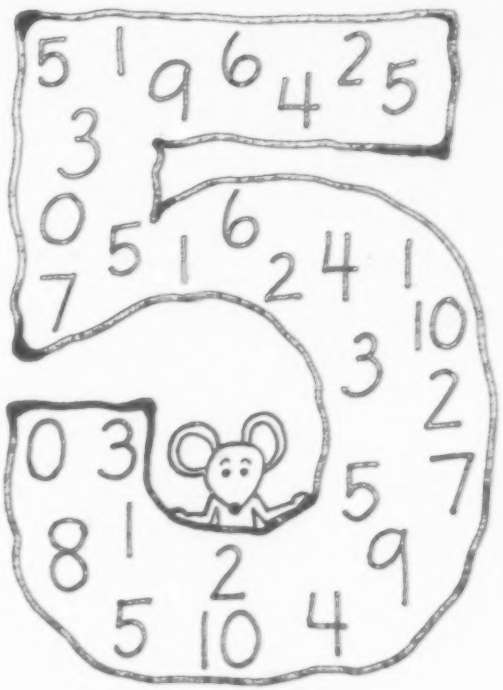

2 4
6
7 9
1 0 6
4 7 2
1 3
8 1 4
3
4 5
10 7
5
4 9
0 8

four


2 4
6
7 9
1 0 6
4 7 2
1 3
8 1 4
3
4 5
10 7
5
4 9
0 8

four



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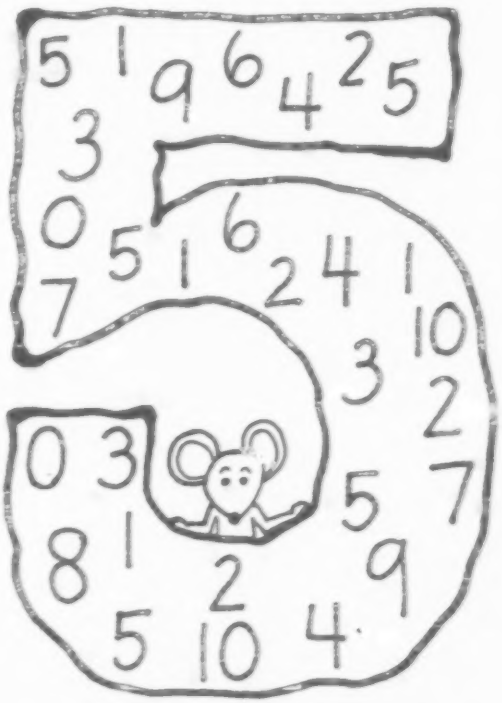

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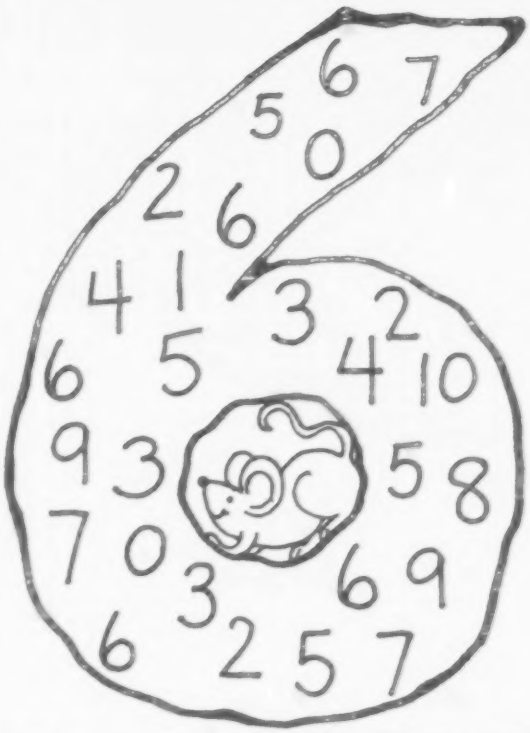

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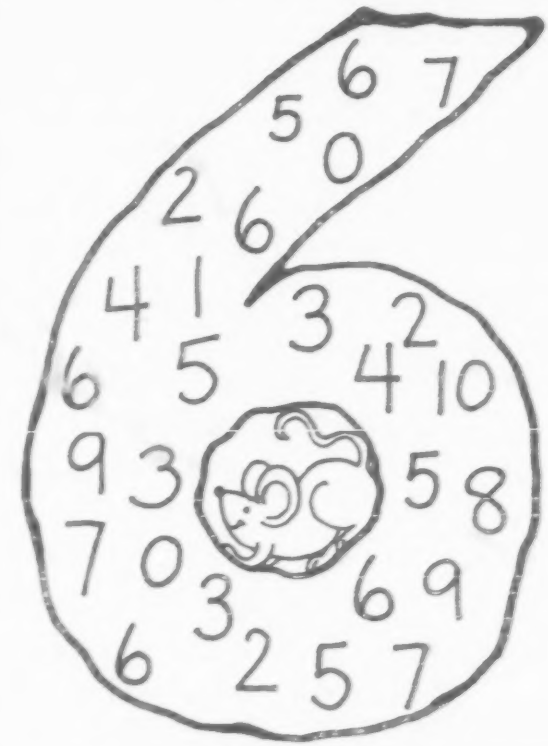

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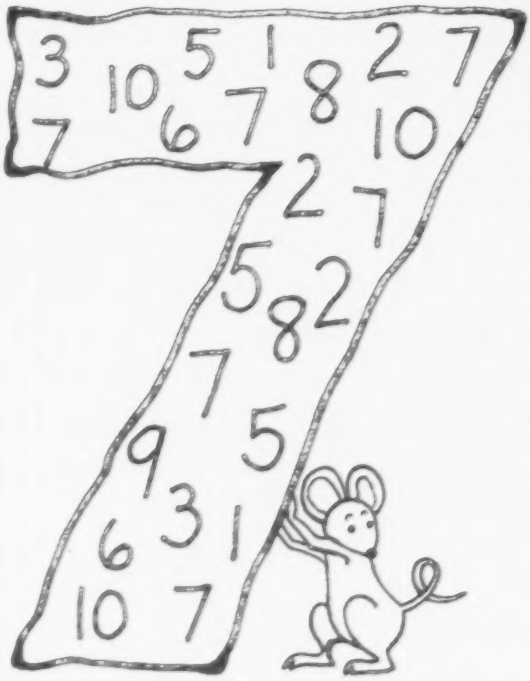
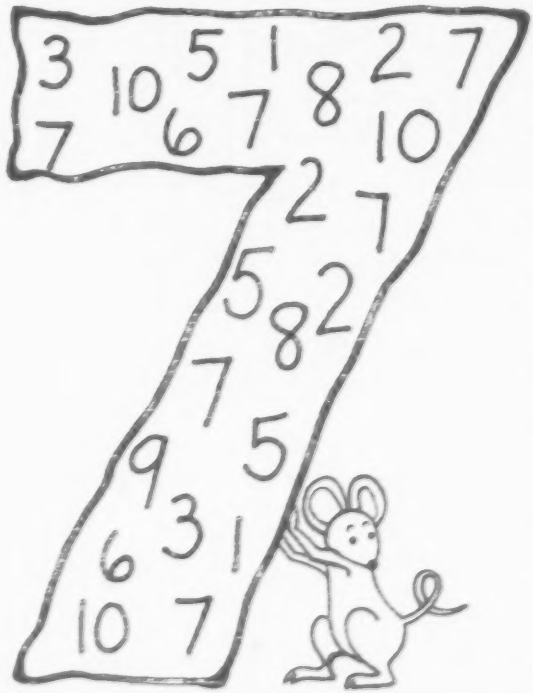
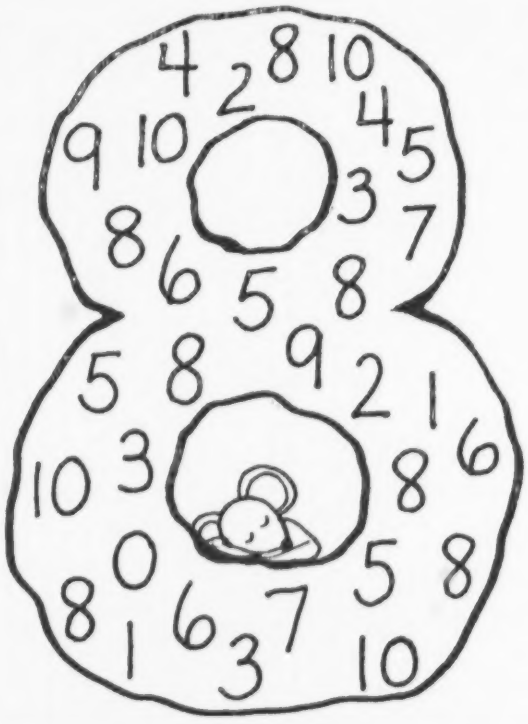

3 5 1 2 7
10 6 7 8 10
7
2 7
5 8 2
7
5
9
3 1
6
10 7

seven


3 5 1 2 7
10 6 7 8 10
7
2 7
5 8 2
7
5
9
3 1
6
10 7

seven



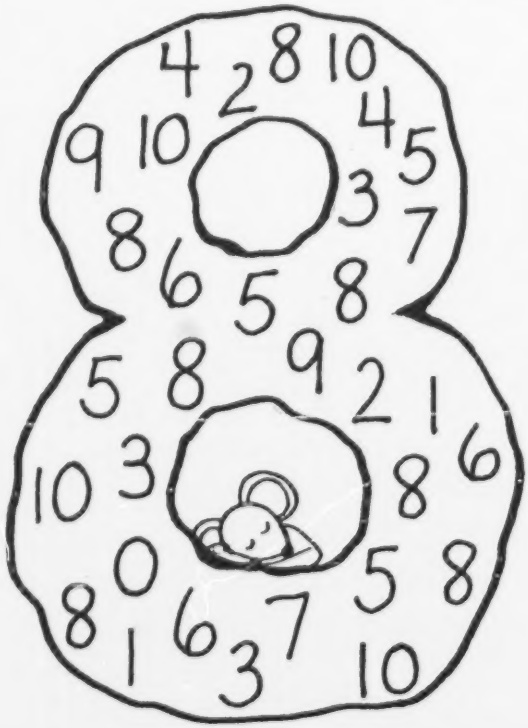
eight

8 8 8

8 8 8

8 8 8

8 8 8



eight

8 8 8

8 8 8

8 8 8

8 8 8

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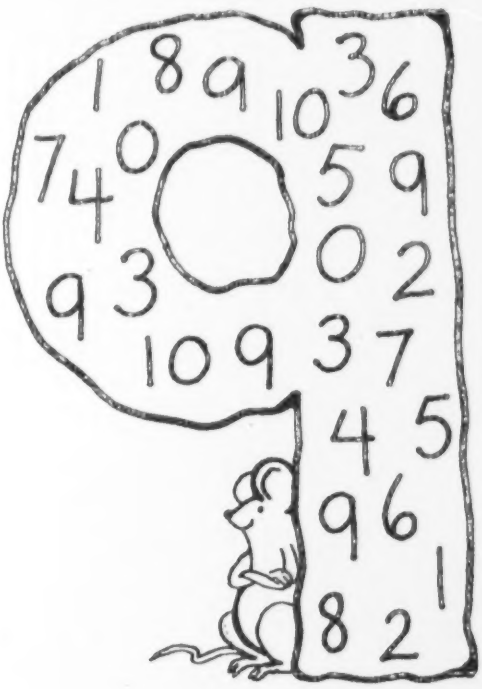


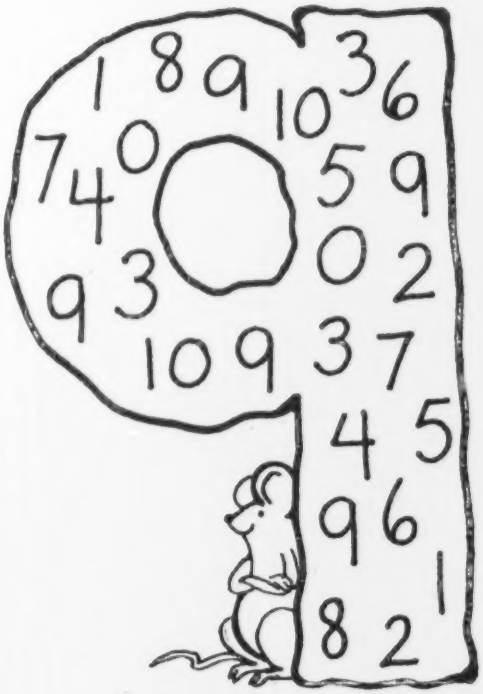
nine

q q q

q q q

q q q

q q q



nine

q q q

q q q

q q q

q q q

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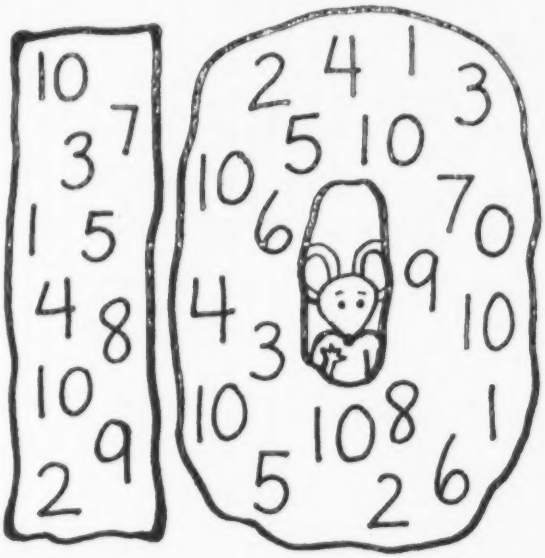


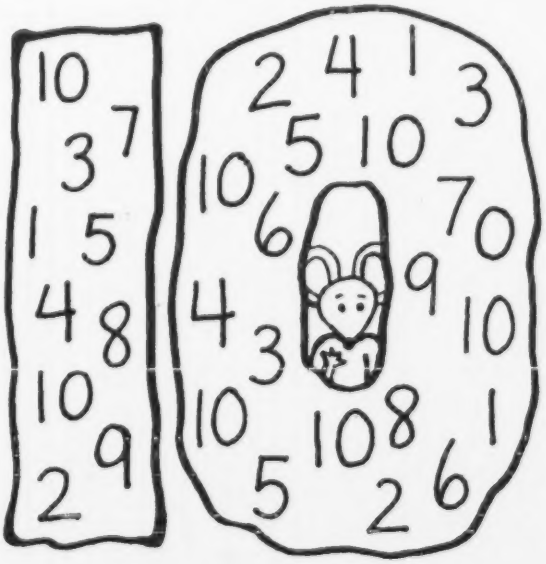
ten

10 10

10 10

10 10

10 10



ten

10 10

10 10

10 10

10 10

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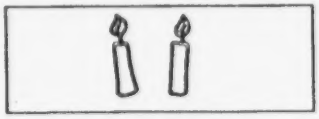
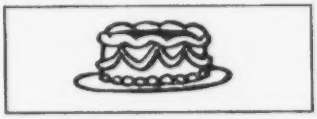
Number Work Sheet

Name: _____

four	1	
one	2	
three	3	
seven	4	
two	5	
eight	6	
five	7	
ten	8	
six	9	
nine	10	

Draw a line connecting each word to its matching numeral. Draw a line from each numeral to its matching illustration.

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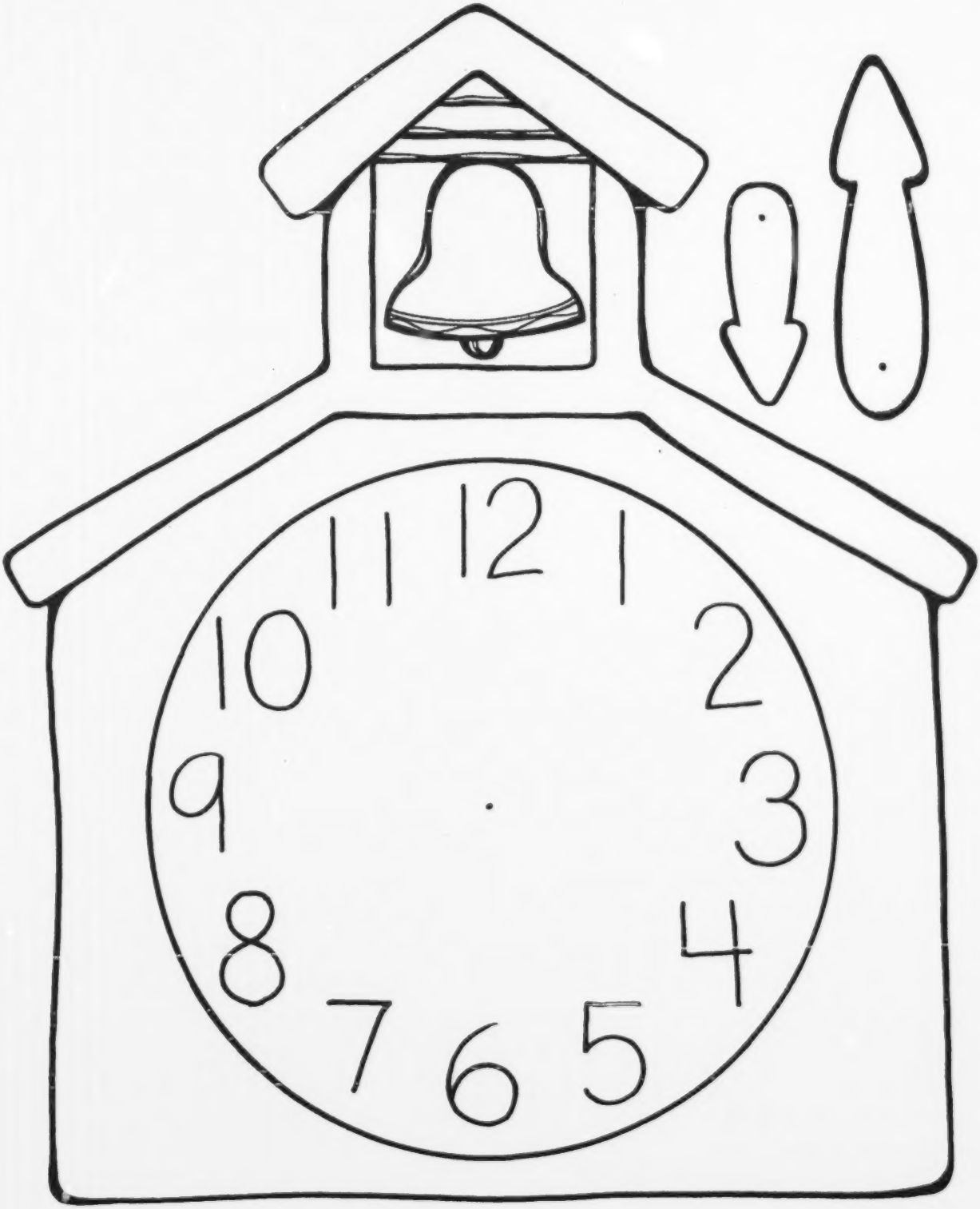
Student Clock



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It's As Easy As 2

Patterns & Activities for a Creative, Balanced Math Program

About the Authors

Tracy Jarboe and Stefani Sadler have more than 25 years' combined teaching experience in the primary classroom. Tracy has a B.A. in child psychology, a multiple subjects credential, and a CLAD credential; she is working on a masters in administration and educational leadership. She has been nominated for Disney's American Teacher Award. Stefani has a B.A. in graphic arts communications and a multiple subjects credential with supplementary authorization in music and art; she also has an M.A. in curriculum and instruction.

Both Tracy and Stefani are respected national presenters and authors, and Stefani is also a successful illustrator. Tracy and Stefani's varied experiences within the world of education include serving as kindergarten, math, and integrated arts mentors; functioning as BTSA support providers and trainers; and working as primary lead and ELL teachers.

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Stefani Sadler

Tracy Jarboe

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